Addis Ababa University

Ethiopian Institute of Architecture, Building Construction and City Development

Chair of Urban and Regional Planning

The Effect of Urban Expansion on the Livelihoods of Farmers: The Case of Addis Ababa City, Ethiopia

By: Yeshitla Agonafir Ayenachew

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Declaration

I, the undersigned, declare that this is my original work, has never been presented at this or any other university, and that all the resources and materials used for the dissertation have been duly acknowledged.

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This dissertation has been submitted for examination with my approval as the student's supervisor.

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Dissertation Approval

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This is to certify that the dissertation prepared by Yeshitla Agonafir Ayenachew, entitled; "The Effect of Urban Expansion on the Livelihoods of Farmers; The Case of Addis Ababa City, Ethiopia" and submitted in fulfillment of the requirements for the Degree of Doctor of Philosophy in Urban and Regional Planning complies with the regulations of the University and meets the accepted standards concerning originality and quality.

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Abstract

Rapid urbanization induced extensive land expropriation in Ethiopia particularly in Addis Ababa city. Land expropriation in turn leads to land use land cover changes and affects the livelihoods of farmers in expansion areas. The study explored the effect of urban expansion on the livelihoods of farmers in Addis Ababa City, Ethiopia. A mixed-method approach was employed, by combining qualitative and quantitative research approaches to collect data from primary and secondary sources. Primary data was collected through 349 household surveys, key informant interviews, focus group discussions, and direct observations. Secondary data was gathered from relevant governmental offices and literature. Additionally, spatial analysis using GIS and remote sensing was conducted to assess LULC changes over two decades from 2000 to 2020, and illustrate the extent of urban expansion into peri-urban agricultural areas. The findings revealed significant gaps in the implementation of legal and policy frameworks regarding land expropriation, valuation, compensation, and resettlement. Over the study period, Addis Ababa's built-up area increased by 25.28%, predominantly at the expense of agricultural land, which decreased by 15.92%, and vegetation cover, which declined by 9.35%. This rapid urban expansion has led to widespread land expropriation, particularly in the peripheral areas, fundamentally altering the peri-urban landscape. The socio-economic impact on expropriated farmers was substantial, with many experiencing a 45.5% decline in income. Before expropriation, 99% of farmers were fully engaged in agriculture, but after dislocation, 33% became unemployed, while 42.4% were forced into temporary, low-paying jobs. Despite government resettlement and livelihood restoration efforts, compensation was inadequate, and resettlement programs lacked the necessary support to restore long-term livelihoods, leaving many farmers impoverished. The study concludes that land expropriation in Addis Ababa had a profound adverse effect on farmers' livelihoods. The study recommended more equitable compensation payment, improved livelihood restoration programs, and inclusive urban planning that prioritizes displaced people. The findings offer valuable insights for policymakers addressing urban expansion, land expropriation, and socio-economic justice.

Keywords: expropriation, valuation, compensation, resettlement, livelihood, farmers

Addis Ababa, Ethiopia

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List of Acronyms/Abbreviations

AACA	Addis Ababa City Administration
AGFI	Adjusted Goodness of Fit Index
AVE	Average Variance Extracted
CA	Cronbach's Alpha
CNN	Convolutional Neural Network
CR	Composite Reliability
CSA	Central Statistical Agency
DF	Degree of Freedom
EBR	Ethiopian Birr
FGD's	Focus Group Discussions
FRUAPO	Farmers Rehabilitation and Urban Agriculture Project Office
GEDI	Global Ecosystem Dynamics Investigation Lidar
GIS	Geographic Information System
GLAD	Global Land Analysis and Discovery Laboratories
KII's	Key Informant Interviewees
LULC	Land Use Land Cover
MSE's	Micro and Small Enterprises
NFI	Normed Fit Index
OSM	Open Street Map
RMSEA	Root Mean Square Error of Approximation
SEM	Structural Equation Modelling
SRMR	Standardized Root Mean Square Residual
TLI	Tucker-Lewis Index
UNECA	United Nations Economic Commission for Africa

CHAPTER ONE: INTRODUCTION

The chapter sets the contexts of urbanization and urban expansion induced land expropriation and its effect on the livelihood of farmers in the peripheral areas of Addis Ababa, Ethiopia. The study explores the effects of land expropriation on the livelihoods of expropriated farmers in selected sub-cities of Addis Ababa, focusing on the socio-economic challenges they face as a result of losing their agricultural land. It also critically examines the compensation mechanisms in place and their adequacy in supporting the transition of expropriated farmers to alternative livelihoods. By focusing on a selected specific sub-city, the study provides a localized analysis of the broader effects of urban expansion on farmers.

The chapter presents the broader context of land expropriation, the research problem, objectives, research questions, scope of the research and detail description of the research organization or structure.

1.1 Background of the Study

> *"The challenge of land expropriation is not just about balancing development with individual rights, but about ensuring that the voices of the displaced are heard, their losses are justly compensated, and their futures are secured." (Cernea, 2003).*

As Cernea narrated above, expropriation, the act of a government taking privately owned land for public use, often in the name of development, is a complex and contentious issue faced by many rapidly urbanizing areas. It involves balancing the need for infrastructural growth and urban expansion with the rights of individuals whose livelihoods and homes are affected. While expropriation can be justified by the broader benefits it brings to society, such as improved infrastructure, housing, and economic opportunities, it also raises critical concerns about fairness and justice for those affected. As highlighted in the statement, "The challenge of land expropriation is not just about balancing development with individual rights, but about ensuring that the voices of the displaced are heard, their losses are justly compensated, and their futures are secured." This summarizes the essence of the ongoing debate surrounding land expropriation, emphasizing the need for transparent processes that prioritize the welfare of displaced people. Without adequate

compensation and long-term resettlement support, expropriation can exacerbate social inequality and marginalize vulnerable groups, undermining the very development it seeks to promote. Thus, any discussion on expropriation must consider not only the legal and economic aspects but also the social and ethical dimensions of displacement.

Land expropriation is commonly understood as the process by which governments or authorized government agencies and enterprises take private land ownership or use rights for public use developments projects, has been a crucial instrument for urban development throughout the world (Harrington, 2001; Thomson, 2020). This process is often justified under the concept of "public purpose" or "public interest," referring to projects such as infrastructure development, urban development programs, and projects that enhance economic growth (FAO, 2008; Lindsay, 2012). Globally, land expropriation has enhanced cities to modernize, expand their infrastructure, and accommodate growing population's need in cities and towns (FAO, 2008; Peng, 2018). However, limitations during its implementation, has also triggered significant concerns related to dislocation, insufficient compensation, and the disruption of livelihoods, particularly among vulnerable individuals such as farmers, women, and youths (Vanclay, 2017; Cernea, 2003; Terminski, 2013).

The practice of land expropriation in Africa is frequently manifested by inadequate legal protections for affected people, unfair compensation, and with very limited public participation during the expropriation process (Tagliarino et al., 2018; Mvunyiswa, 2021). In some countries, land expropriation has led to significant social unrest, as affected communities challenge the fairness and transparency of the process (Palmer et al., 2009; Mugisha, 2015). The African Union's Framework and Guidelines on Land Policy in Africa highlights the need for equitable land tenure systems and fair compensation mechanisms to address these issues. Despite these guidelines, the implementation of fair land expropriation practices remains inconsistent across the continent (Africa Union, 2009; Msangi, 2011).

In Sub-Saharan Africa, land expropriation is particularly contentious due to the region's unique socio-economic and cultural dynamics. Land is not only an economic asset but also considered as a key component of social identity and cultural heritage (Quan et al.,

2004; Cotula et al., 2004). As a result, the expropriation of land, particularly in urban peripheral areas, can have substantial effects on the livelihoods and social values of communities. In many Sub-Saharan African countries like Ghana, Nigeria, land expropriation is driven by the need to extend urban developments, to develop residential areas, infrastructure, and industrial developments (Tagliarino et al., 2018; German et al., 2011). However, because of absence or unclear legal frameworks, coupled with problems during implementation, often results in practices that are alleged as biased by affected communities (Tagliarino et al., 2018; Cotula et al., 2004).

The compensation payment for displaced peoples by expropriation in Sub-Saharan Africa is normally inadequate, which is incomparable with the true value of the land or the socio-economic losses suffered by the displaced people. Additionally, resettlement and livelihood restoration schemes are often poorly planned and implemented, causing long-term socio-economic hardships for disturbed peoples. The absence of strong land governance frameworks aggravates the problems, making it difficult to balance the needs for a growing urban development in one hand and the rights of land use right holders in another (Tagliarino, 2017; Quan et al., 2004).

Ethiopia, one of the fastest-growing economies in Sub-Saharan Africa, is experiencing rapid urbanization, particularly in its capital, Addis Ababa. The city administration has prioritized urban renewal/redevelopment and infrastructure development as key pillars of economic growth (Ozlu et al., 2015; Alemu, 2015; Ambaye, 2013). Consequently, land expropriation has become a common practice to facilitate these growing urban development's needs (Ambaye, 2013; Alemu; 2015). The legal and policy frameworks governing land expropriation in Ethiopia involves several institutions, proclamations, regulations, and directives aimed at ensuring that land is expropriated for developments projects that meet the public purposes/interests and that the affected land owners or use right holders provided with fair and appropriate compensation (FDRE, 1995:40(8); FDRE, 455/2005; FDRE, 1161/2019).

Addis Ababa, the primate capital city in Ethiopia, is a melting point of the nation's urbanization process. The city has experienced significant growth in recent years, prompted by economic development, population growth, and the government's urban

development strategies (Wubneh, 2013; Ozlu et al., 2015; Terfa et al., 2019). This rapid urbanization has necessitated the expropriation of large-plots of land, particularly in the expansion areas of the city mainly in Yeka, Bole, Akaki-Kality, and Nifas-Silk lafto sub-cities where the city expands and agricultural activities are predominant (Abdissa, 2005; Worku, 2008; Wubneh, 2013). The expansion of Addis Ababa has often come at the expense of a declining agricultural land, leading to the displacement of farmers and the disruption of their livelihoods (Kassa et al., 2011; Graetz et al., 2016; Weldeghebrael, 2021; Ayenachew and Abebe, 2024).

The legal framework governing land expropriation in Addis Ababa includes the constitution, federal government proclamations, mainly Proclamation No. 455/2005, Proclamation No.1161/2019, regulation No. 135/2007, regulation 472/2020, directives by the city councils like 19/2014 and 79/2020 directives in Addis Ababa, which provides the most recent guidelines for expropriation of land for public purposes and the payment of compensation. However, the implementation of these laws has been challenging. Many affected land use right holders, particularly farmers in the peripheral areas, have raised concerns about the adequacy of compensation, transparency of the valuation process, and the lack of meaningful participation in the expropriation decision making process (Ozlu et al., 2015; Alemu, 2015; Lemessa et al., 2023).

Therefore, the practice of land expropriation in Addis Ababa, is a critical issue that interrelates with the broader themes of urbanization, land use land cover changes, and socio-economic development. While land expropriation is necessary for urban expansion and infrastructure development, it also results in significant challenges, particularly for vulnerable people like farmers. Previous studies on expropriation are studied related to inner city redevelopment like Ambaye (2013) and Abdo (2015) which are typically legal studies on land rights and land tenure systems, Alemu (2015) on expropriation for redevelopment. Others like Dires et al (2021) and Kassa (2011) are studies the regions in Amhara and Oromia regional states. They did not address the socio-economic effects of land expropriation on peripheral farmers and the post expropriation resettlement and livelihood restoration supports comprehensively. Therefore, this study aims to explore these gaps in detail, with a focus on understanding the legal and policy frameworks, the dynamics of land use land cover changes, the socio-economic effects of land

expropriation on farmers' livelihoods, and the evaluate the compensation, resettlement, and livelihood restoration packages in restoring the life of the affected farmers sustainably.

1.2 Statement of the Problem

The rapid urbanization of Addis Ababa, Ethiopia's capital and largest city, has led to an increased demand for land to accommodate the expanding infrastructure, housing, industry, and economic development activities (Larsen et al., 2019; Koroso et al., 2021). This urban expansion has necessitated the expropriation of large parcel of land, particularly in the expansion areas of the city particularly in Yeka, Bole, Akaki-Kality, and Nifas-Silk sub-cities, where agriculture is the primary livelihood for many farmers residents (Belay, 2016; Tezera, 2020). While the process of land expropriation is essential to meet the growing needs of the city, it has also given rise to significant social, economic, legal, and policy related challenges, particularly for the farmers and individuals whose land is being expropriated (Mohammed et al., 2017; Ayenachew and Abebe, 2024).

In Addis Ababa, the displacement of farmers due to land expropriation has had significant socio-economic impacts. Many displaced farmers have struggled to find alternative sources of income, and the compensation given often inadequate to reestablish their livelihoods. Resettlement and livelihood restoration packages, while intended to provide support, have often been criticized for their inadequacy in providing long-term sustainable solutions. As a result, there is a growing gap to examine the legal and policy frameworks that govern land expropriation in Addis Ababa particularly in peri-urban areas, assess the socio-economic effects of the expropriation on the livelihoods of affected farmers, and evaluate the effectiveness of compensation, resettlement supports, and livelihood restoration mechanisms provided to restore the livelihoods of land lost farmers in a sustainable manner (Belay, 2016; Lemessa, 2023).

The land expropriation practiced in Addis Ababa is governed by a series of legal frameworks such as proclamations, regulations, and directives most notably FDRE proclamation No. 455/2005, FDRE proclamation No. 1161/2019. This legislation aims to provide a legal framework for the expropriation of land for development projects that

meet the public interest, ensuring that affected land use right holders attain a commensurate compensation and resettlement support. However, despite these legal protections, the implementation of land expropriation policies in Addis Ababa has been contentious with challenges that have profound implications for the livelihoods of those affected peoples especially farmers in the peripheral areas of the city (Koroso et al., 2021; Tezera, 2020).

One of the primary concerns is the inadequacy of compensation provided to displaced farmers due to expropriation. Compensation is often calculated based on the use of the land not the market value of the land and properties, yet it frequently fails to fully account for the economic value of the land to the farmers, including their long-term income they generate from agriculture and related activities. Moreover, the compensation process itself is often perceived as lack of transparency and fairness, with inconsistencies in the valuation of properties and delays in compensation payment further aggravating the situation (Belay, 2016; Ambaye, 2013; Alemu, 2015).

The socio-economic effects of land expropriation on displaced farmers in Addis Ababa are extensive. The loss of land, which is not only a primary source of income but also a key element of farmers cultural identity and social stability, resulting in a range of adverse consequences. The displaced farmers repeatedly struggle to find alternative livelihoods, particularly in an urban context where their skills and knowledge are not easily transferable (Yang, 2014; Huang et al., 2017). The transition from rural to urban living also led to social dislocation, loss of community ties, and psychological stress (Cernea, 2003; Dires et al., 2021; Adgeh and Abebe, 2023; Tuan, 2021).

Moreover, resettlement and livelihood restoration programs designed to assist displaced populations in Addis Ababa have been criticized for their inadequacy. While these programs aim to provide housing and other forms of supports, are not adequate to assist the displaced farmers achieve sustainable livelihoods. The lack of effective livelihood restoration measures means that many displaced farmers and their families face long-term economic hardship and are unable to regain their pre-expropriation standard of living (Dires et al., 2021; Abebe & Hesselberg, 2013).

Therefore, this study aims to fill these gaps by providing a comprehensive examination of the practice of land expropriation in Addis Ababa. It also analyzes the dynamics of urbanization and land use land cover changes, investigate the socio-economic effects on displaced farmers, and critically evaluate the effectiveness of livelihood restoration and resettlement support programs. By addressing these issues, this research aims to contribute to a deeper understanding of the challenges faced by displaced farmers and offer insights into more equitable and sustainable practices. The findings will be valuable for policymakers, urban planners, and stakeholders in designing interventions that protect the rights and livelihoods of affected communities while supporting the city's growth.

1.3 Research Questions

1. What are the legal and policy frameworks governing land expropriation in Addis Ababa, and how effectively are they implemented?
2. How does urbanization contribute to land use and land cover changes, as well as land expropriation, in Addis Ababa?
3. How land expropriation is adversely affected the livelihoods of farmers in Addis Ababa?
4. Is the resettlement, and livelihood restoration supports adequately restored the livelihood of displaced farmers?

1.4 Research Objectives

1.4.1 General Objective

The general objective of the study is to investigate the effects of urban expansion on the livelihoods of farmers in Addis Ababa, Ethiopia.

1.4.2 Specific Objectives

More specifically the study intended to address the following specific objectives;

1. To examine the legal and policy frameworks governing land expropriation in Addis Ababa City
2. To analyze the dynamics of urbanization on land use land cover changes in the city
3. To assess the effects of land expropriation on the livelihoods of farmers in the peripheral areas of the city
4. To evaluate the resettlement and livelihood restoration supports provided for the affected farmers

To address the fourth objective of the study, which is to evaluate the resettlement and livelihood restoration supports provided for the affected farmers, the following research hypotheses were formulated and tested. These hypotheses aim to assess the adequacy, effectiveness, and impact of resettlement programs and livelihood restoration measures on displaced farmers. By analyzing these hypotheses, the study seeks to determine whether the support mechanisms in place have contributed to improving the socio-economic conditions of affected farmers and ensuring their sustainable livelihood after displacement. Development support significantly and positively affects livelihood restoration among evicted peri-urban farmers. The hypothesis includes;

- Sociocultural factors positively and significantly influence livelihood restoration.
- Compensation positively impacts livelihood restoration, playing a crucial role in enabling farmers to re-establish their livelihoods.
- Access to income opportunities significantly and positively affects livelihood restoration.
- Improvements in land and infrastructure positively impact livelihood restoration.
- Perceived economic security has a positive and significant effect on the livelihood restoration of evicted peri-urban farmers.
- Compensation has a positive and significant effect on perceived economic security among evicted peri-urban farmers.
- Improvements in land and infrastructure positively impact perceived economic security.

- Increased income opportunities positively affect perceived economic security among the displaced farmers.
- Sociocultural factors have a positive and significant effect on perceived economic security.
- Development support positively influences perceived economic security among the farmers.

1.5 Significance of the Research

In addition to its academic contributions, the findings of this study held significant relevance for various purposes. Firstly, they supported the city administration in decision-making related to land expropriation, valuation for compensation, resettlement, and livelihood restoration. By critically examining urbanization and land expropriation practices in Addis Ababa, with a focus on legal and policy frameworks, the study identified crucial gaps in existing expropriation, valuation for compensation, resettlement, and livelihood restoration schemes. The findings also provided valuable insights that informed urban planning strategies, emphasizing the need to balance city development with the livelihoods of farmers.

Secondly, the study contributed to the scientific community by filling gaps in the literature on the intersection of urbanization, land expropriation, and the socio-economic impacts on the livelihoods of affected people in Ethiopia. It also served as a reference for future studies in this field. Thirdly, the study played a crucial role in raising awareness within local communities about the challenges associated with land expropriation, fostering greater advocacy for more equitable and sustainable urban development practices that could lead to better socio-economic outcomes for displaced communities.

1.6 Limitations of the Research

This study faced several challenges that affected its progress, completion, and findings. One of the major challenges was the contentious and complex nature of land expropriation, which posed difficulties for both practitioners and academicians. Additionally, the COVID-19 pandemic created significant obstacles, particularly during data collection, as it limited participant engagement and accessibility. Some respondents

were reluctant to participate in surveys, interviews, and focus group discussions, and many hesitated to allow audio recordings or photographs.

Despite these challenges, the researcher successfully managed the complexities encountered during the study by employing alternative strategies to collect all relevant data from various sources. As a result, the dissertation was completed successfully without compromising the intended research outcomes.

1.7 Scope of the Study

This study on land expropriation in Addis Ababa, Ethiopia, explores various dimensions that define its scope such as the temporal, contextual, conceptual, and methodological aspects.

Temporally, the study covers data from 2018 up to the year 2022. This temporal focus allows for an examination of recent trends and patterns in land expropriation practices and their effect. By analyzing data up to this point, the study captures the most relevant and current dynamics in the practice of land expropriation, urbanization, and their socio-economic implications in Addis Ababa.

Spatially, the research is geographically confined in four specific sub-cities of Addis Ababa: Yeka, Bole, Akaki-Kality, and Nifas-Silk Lafto and woredas/districts that are purposively selected from these sub-cities. These areas are selected due to their significant role in the city's horizontal expansion and the high incidence of land expropriation affecting local farmers. While thematically, the study addresses the dynamics of urbanization, land use, and land cover change in relation to land expropriation practices. It investigates the socio-economic effects on farmers whose livelihoods are affected by expropriation, and evaluates the adequacy and effectiveness of livelihood restoration and resettlement support provided to these farmers by the city administration.

1.8 Organization of the Research Document

This research document was structured into five chapters. Following a brief introduction, Chapter One contextualized the study by providing background information on land expropriation and urbanization, starting at the global level and narrowing its focus to Africa, Sub-Saharan Africa, and Ethiopia, particularly Addis Ababa. It also outlined the problem statement, identified research gaps, and detailed the study's objectives, research questions, hypotheses, significance, scope, and organization of the research document.

Chapter Two presented the literature review, covering key concepts and definitions, as well as a review of both theoretical and empirical literature relevant to the topic. It also included an analysis of international practices from various countries to provide comparative insights.

Chapter Three described the research methodology, including an overview of the study area, the research design and approach, data collection methods, analysis techniques, and the sampling procedures employed in the study.

Chapter Four presented the results and findings, focusing on the legal and policy frameworks governing land expropriation, the dynamics of land use and land cover (LULC) changes, the socio-economic impacts of expropriation on affected farmers, and the resettlement and livelihood restoration mechanisms implemented.

Finally, Chapter Five provided the conclusions, recommendations, and suggestions for further research, summarizing key findings and proposing practical measures for improving land expropriation policies and their impact on affected communities.

CHAPTER TWO: LITRATURE REVIEW

2.1 Introduction

The literature review provides a comprehensive examination of the conceptual, theoretical, and empirical foundations related to urbanization, land expropriation, and its socio-economic effects on livelihoods of farmers. It begins by exploring the fundamental definitions of key terms and concepts such as urbanization, expropriation, valuation, compensation, resettlement, livelihood restoration. It also deals with theories to understand the relationships between urbanization, land expropriation, and socio-economic outcomes. Moreover, empirical researches are also reviewed to provide insights into land expropriation practices and their effects on farmers' livelihoods in peri-urban areas, with a focus on country experiences and international standards.

Studies reveal that land expropriation in Ethiopia, driven by rapid urbanization and the expansion of Addis Ababa, has led to the dislocation of farming communities, resulting in significant socio-economic impacts such as income loss, food insecurity, and increased poverty. The effectiveness of resettlement and livelihood restoration programs is also reviewed. The review further analyzes the existing legal and policy frameworks that govern land expropriation, valuation, compensation, and resettlement in Ethiopia.

2.2 Basic Concepts and Definitions of Terms

2.2.1 Urbanization

Urbanization is the process by which an increasing proportion of a population comes to live in urban areas, typically resulting in the growth and expansion of cities and towns (Davis, 2015). This phenomenon is closely linked to economic development, as urban areas often serve as centers for industry, commerce, and services, attracting people from rural areas in search of better employment opportunities and improved living conditions. Migration plays a significant role in urbanization, as individuals and families move to cities in pursuit of the economic, social, and educational opportunities that urban centers typically offer (Davis, 2015; Trask, 2022; Sakketa, 2023).

Population growth, both natural and through migration, further accelerates urbanization. As cities expand, they tend to develop more complex infrastructures, including transportation networks, housing, healthcare, and educational facilities, which in turn attract even more people. This concentration of populations in urban areas can lead to significant changes in land use, economic structures, and social dynamics. However, rapid urbanization also presents challenges, such as the strain on resources and infrastructure, environmental degradation, increased inequality, and the potential for social tensions (Li and Ma, 2014).

Understanding the drivers and impacts of urbanization is crucial for developing sustainable urban policies that can manage growth while improving the quality of life for urban residents. This transformation typically leads to the conversion of rural land, including agricultural fields and forests, into urban infrastructure, such as housing, commercial areas, and roads. The change in land use is often accompanied by land cover modifications, such as the replacement of natural vegetation with impermeable surfaces like concrete, buildings, and asphalt. These changes significantly alter the natural environment, leading to various ecological and environmental consequences, including loss of biodiversity, soil erosion, and changes in local climate patterns (Wu et al., 2021; Nuissl & Siedentop, 2021).

2.2.2 Land Expropriation

Land expropriation is the process by which the government or authorized entities legally acquire private land for public purposes, such as infrastructure development, urban expansion, or industrial projects (Gebremichael, 2016). This process is governed by national laws and policies that outline the conditions under which land can be expropriated and the compensation to be provided to landholders (FAO, 2008). Common challenges in land expropriation include disputes over land ownership, inadequate compensation, and the social and economic impacts of displacement. Land expropriation often disrupts the livelihoods of rural populations who rely on the land for their income and sustenance (Grove, 2018; Lindsay, 2012).

Compulsory purchase, expropriation, eminent domain, and simply "taking" are various terms used to describe the same legal mechanism that empowers governments to take private property without the consent of the owner for a purpose deemed to serve the public purpose. Historically, expropriation has been a central tool in land policy, enabling states to implement infrastructure projects, urban development, and other initiatives aimed at benefiting the broader community. However, this power has become increasingly controversial, drawing significant criticism and encountering growing social resistance (Romitan, 2020; Ambaye, 2013).

Several factors have influenced the evolving landscape of expropriation. Campaigns advocating for housing rights have gained momentum, challenging the traditional justifications for forced land acquisition. Additionally, movements defending property rights have intensified, pushing back against what is perceived as government overreach. Legislative and judicial activism has further complicated the exercise of eminent domain, with courts and lawmakers imposing stricter conditions and safeguards to protect affected property owners. Moreover, land tenure reforms in various countries are redefining the parameters within which governments can invoke their power of expropriation, often emphasizing the need for fair compensation, transparent processes, and greater consideration of the social impacts on displaced communities (Romitan, 2020; Muzyczka, 2019; Slade, 2012).

These shifts reflect a broader trend towards questioning the balance between public interest and individual rights in the context of land acquisition. As governments navigate this changing environment, the exercise of eminent domain is likely to become more contentious, with increasing demands for accountability, equity, and respect for the rights of those whose properties are targeted for compulsory purchase (Grover, 2018; FAO, 2008).

Expropriation as a method of land acquisition is a relatively recent development in Ethiopian history. It was formally introduced during Emperor Menelik II in 1908 through a land charter for the newly established city of Addis Ababa. There is limited historical evidence to suggest that earlier Ethiopian kings used expropriation to acquire privately owned land for public purposes. Major public development projects, such as road

construction, dam building, or the establishment of new towns, have traditionally triggered the need for expropriation (Ambaye, 2013; Alemu, 2015).

In Ethiopia's past, there are only a few recorded instances of emperors engaging in such development activities, with no known records from the early Axumite era, the country's first civilization. Although more historical information is available from the seventeenth century during the Gondarine Era, it appears that either historians and royal chroniclers of the time deliberately omitted references to expropriation or did not consider it significant enough to document. Thus, it can be argued that expropriation is a legal concept that gained prominence in the twentieth century (Ambaye, 2013).

Significant developments in the nature and application of expropriation occurred alongside the country's economic and social changes. The 1960s, often regarded as a golden era for Ethiopia's legal system, saw the codification of various laws, most notably the 1960 Civil Code. This Civil Code, unlike previous legal frameworks, included several provisions specifically addressing expropriation. However, these provisions were suspended for twenty years following the fall of the imperial era in 1975 and the rise of the Derg regime. A new set of expropriation rules was subsequently introduced in 2004 and revised in 2005, marking a new chapter in the legal treatment of land acquisition in Ethiopia.

According to Ambaye (2013) and Abdo (2015) in Ethiopia, the power to expropriate land for public purposes did not become a significant issue until the early twentieth century. Before this period, Ethiopia was relatively small, with limited needs for public works. The economy was predominantly agricultural, and urbanization was virtually nonexistent, leaving little incentive for leaders to acquire land for public projects. Throughout most of its history, Ethiopia consisted of small villages and isolated homesteads, with little focus on urban development. Modern urbanization in Ethiopia began with the establishment of Addis Ababa as the capital in 1886. While some road construction for military purposes had started earlier in the mid-nineteenth century, large-scale public infrastructure projects only became more common after the capital was established (Tegenu, 2010; WoldeMichael, 1973).

2.2.3 Valuation for Compensation

Valuation is the process of determining the current market value of an asset, typically real property. While the terms "valuation" and "appraisal" are often used interchangeably, they actually have distinct meanings. Valuation refers to the broader process of estimating the worth of a property based on various factors such as market conditions, location, and property characteristics. On the other hand, an appraisal is a more specific assessment or judgment made by a qualified professional who evaluates and quantifies the value of the property (Blackledge, 2016; Crosby et al., 2018; Goddar & Moser, 2011).

In essence, valuation is the overarching process, and an appraisal is a key component within that process, involving a detailed and expert analysis to arrive at a precise estimation of the property's worth. The distinction is important, as appraisals typically involve professional expertise and are often required for legal, financial, or insurance purposes, whereas valuation may encompass a wider range of methods and purposes (Ambaye, 2013; Goddar & Moser, 2011).

Valuation involves estimating the economic value of land and its associated assets, such as buildings and crops. The valuation process is crucial in determining compensation during land expropriation (Alemu, 2015; Msangi, 2011). Methods of valuation include market-based approaches, cost-based approaches, and income-based approaches (Blackledge, 2016). Challenges in property valuation include discrepancies between market value and compensation, lack of transparency in the valuation process, and the undervaluation of customary land, particularly in rural. These issues can lead to disputes and dissatisfaction among affected landholders (Cheloti & Mooya, 2021; Alemu, 2013).

2.2.4 Compensation

Compensation during expropriation refers to the full indemnity or remuneration for the loss or damage sustained by the owner of the property taken for public use (Ambaye, 2013). This principle ensures that when property is expropriated, the owner is reimbursed for the value of the property and placed in a financial position equivalent to if the property had not been taken (Lindsay, 2012; FAO, 2008). The compensation should cover the property interest taken and ensure the owner is not financially worse off. While the ideal approach might involve substituting the lost property, practical constraints often

make financial compensation the preferred method (Ndjovu, 2003). This compensation is determined by the property's value rather than its cost, emphasizing that it is the property's value that the state seeks to protect, not the cost of acquiring it.

The rationale for compensation is supported by socio-political, economic, and legal theories. Socio-politically, compensation helps maintain social justice by protecting the rights of under-represented groups and ensuring that the burdens of public projects are borne by the government, rather than individual property owners. This principle argues against singling out individuals to bear the entire burden for projects intended for the common good, and serves as a safeguard against arbitrary actions by government authorities. Compensation serves as a check on the self-serving actions of public officials, and many basic laws incorporate compensation provisions to protect private property from arbitrary expropriation (Tagliarino, 2017; Akujuru, 2010).

From an economic perspective, requiring the government to pay for what it acquires encourages more prudent decision-making. If the government bears the financial costs of expropriation, it is incentivized to make more rational and beneficial decisions regarding public projects. This ensures that projects are beneficial for all parties involved and prevents unwise or imprudent decisions. Furthermore, legal protections for property rights are essential for maintaining investor confidence (Ambaye, 2012; Alemu, 2015). Without adequate compensation and protection, property owners might be reluctant to invest in their properties, and banks might be unwilling to finance such investments, as the potential benefits could be undermined by insufficient legal safeguards. In summary, compensation not only addresses the immediate financial impact of expropriation but also supports broader economic and legal stability by promoting fair treatment and encouraging rational investment decisions (Alemu, 2015; Perera, 2014; Msangi, 2011).

Compensation in the context of land expropriation involves various forms of payment made to landowners and occupants when their property is taken for public use, aiming to provide fair and adequate restitution for their loss. Monetary compensation typically includes cash payments based on the market value of the land and any improvements made to it, such as buildings or agricultural developments. This monetary compensation enables affected individuals to acquire new land or invest it in alternative assets. In-kind

compensation may involve offering alternative land or housing to those displaced, ensuring they can continue their previous activities. For example, replacement land is expected to match the value and utility of the taken land, while housing compensation addresses immediate needs in urban settings (Harris, 2015; Persson, 2015; Du Plessis, 2009).

2.2.5 Resettlement and Livelihood Restoration

Resettlement refers to the relocation of displaced individuals to new areas, while livelihood restoration involves ensuring that these individuals can sustain themselves economically after displacement. Both are critical components of land expropriation policies, particularly in ensuring that displaced individuals are not left worse off (Vanclay, 2017; Cernea, 2009b). It is a critical aspect of compensation and resettlement efforts. This involves providing alternative employment opportunities, vocational training, and access to resources that allow displaced individuals to rebuild their lives (Kabra, 2018). Challenges in resettlement include inadequate housing, lack of infrastructure, and difficulties in accessing services such as healthcare and education. These challenges can exacerbate the socio-economic impacts of displacement, leading to long-term poverty and social inequality (Vanclay, 2017).

While, livelihood refer to the means by which individuals and communities sustain themselves, encompassing the resources, activities, and strategies used to generate income and meet basic needs. Livelihoods are closely linked to land, particularly in rural areas where agriculture is the primary source of income (Cernea, 2003). The concept of livelihood vulnerability is central to understanding the impact of land expropriation and displacement. Vulnerability refers to the susceptibility of livelihoods to shocks, such as land loss, which can undermine the ability of individuals and communities to maintain their standard of living. Displacement due to land expropriation often exacerbates livelihood vulnerability, as individuals lose access to land, resources, and social networks. Livelihood strategies refer to the diverse ways in which individuals and communities adapt to changes in their environment, such as land loss. These strategies may include diversifying income sources, migrating to urban areas, or engaging in alternative economic activities. Effective livelihood restoration programs focus on

providing displaced individuals with the skills, resources, and support needed to develop sustainable livelihood strategies in their new environment (Kabra, 2018; Smyth & Vanclay, 2017; Cernea, 2003).

Resettlement assistance encompasses a range of support services to help individuals relocate and re-establish their lives. This includes logistical support for moving, temporary housing during the transition, and assistance with securing new land or housing. Additionally, livelihood restoration programs may offer job training, financial aid, or other resources to help individuals rebuild their economic stability. Effective compensation and resettlement measures are crucial for minimizing the negative impacts of expropriation, upholding legal and ethical standards, and fostering trust between the government and affected communities. A comprehensive approach that includes monetary payments, in-kind benefits, and robust support services is essential for ensuring fair outcomes and facilitating successful transitions for those impacted (Smyth & Vanclay, 2017; Alemu, 2015).

2.2.6 The Valuation Methods/Approaches

Valuation approaches are fundamental methods employed in the appraisal process to determine the market value of real property. The sales comparative, the income, and the cost approach are the most widely applied methods of valuation. An appraiser must carefully select one or a combination of these approaches to arrive at an accurate and fair estimate of the property's value, depending on the property's nature and the purpose of the valuation (Abidoye et al., 2019; Pagourtzi et al., 2003; Goddar & Moser, 2011).

a) The Sales Comparison Approach

The Sales Comparison Approach is particularly prevalent in property valuation, especially for land and residential properties. In this method the value of the subject property is determined in comparison with other similar properties that have recently been exchanged in a similar normal competitive market. The justification behind this method is that the sale price of a comparable property, which is agreed upon by both a willing seller and a willing buyer, used as a dependable reference for the value of the property under assessment. This method effectively reflects the behavior of the real estate market, where the value of a property is influenced by the prices of other similar

properties in the neighborhood. It assumes that a rational buyer would not pay more for the subject property than they would for a comparable one, and similarly, a seller would not accept less than what a comparable property sold for. The final sales price reflects the prevailing supply and demand relationship within the market (Büyükkaraciğan, 2021; Abidoye et al., 2019; Goddar & Moser, 2011).

To apply this approach, the valuer prudently selects comparable properties those that closely match the subject property in terms of location, size, condition, and other relevant characteristics. Adjustments may be made to account for differences between the subject property and the comparables to ensure a fair comparison. Finally, the appraiser estimates the value of the subject property based on the adjusted sales prices of the comparables. This approach is widely regarded as one of the most reliable methods for estimating market value, particularly in active markets where recent sales data is readily available (Abidoye et al., 2019; Goddar & Moser, 2011).

b) The Cost Approach

The cost approach of valuation is the second widely used valuation technique where valuers determine the value of a property by adding the value of the land as if vacant to the depreciated value of any developments/improvement. During valuation, the cost approach is commonly used method of valuation where valuers assess a property's value by adding the value of the land as if vacant with the depreciated value of any improvements or development on the property at the time of valuation. This approach calculates the property's worth by estimating the current cost of constructing a replacement or reproduction of an existing improvements and then subtracting the amount of depreciation. The appraiser factors in depreciation to adjust the total value, ensuring that the appraisal reflects the actual condition of the property. This method is particularly relevant in developed countries with active markets, where it operates on the theory that the market value of an improved parcel can be estimated by adding the value of the land as if vacant and the depreciated value of development improvements. The approach assumes that cost equals value, although this assumption may not always hold true in every market situation (Büyükkaraciğan, 2021; Goddar & Moser, 2011).

To apply the cost approach, appraisers require detailed information on the cost of land, the cost of building improvements, and the extent of depreciation. The method starts with determining the site value, followed by estimating the replacement cost of the improvements. The replacement cost refers to the estimated expense of building a new structure that is equivalent to the original, but using contemporary materials and standards. While the reproduction cost is the estimated expense of creating an exact replica of the original building, employing the same materials and construction methods as were originally used (Abidoye et al., 2019; Fisher & Louziotis, 2013).

The total cost of improvements includes direct costs, such as labor and materials, and indirect costs, such as architectural fees, legal fees, taxes, and administrative expenses. Additionally, entrepreneurial services and other related costs may be factored in to account for expenses typically incurred in bringing the property to its completed state.

c) The Income Approach

The income approach, also known as the capitalization of income approach, is an alternative valuation method to the comparative sales approach, particularly useful in markets that are relatively inactive. This approach is most commonly applied to agricultural land and investment properties. It involves assessing a property's potential to generate future income and converting that income into a present value estimate (Abidoye et al., 2019; Baum et al., 2013).

In this method, the property's value is determined by calculating the present value of anticipated future benefits, which include income streams generated over the property's lifetime and potential proceeds from its sale. The value is then determined by dividing the property's yearly net income to an estimated capitalization rate. This rate reflects the expected return on investment and is used to translate the income stream into a current value, providing an indication of the property's worth (Baum et al., 2013; Goddar & Moser, 2011).

2.3 Theoretical Literature Review

2.3.1 The indemnity and taker's gain theories of Compensation

The Indemnity Theory is also called the fair Compensation Theory, sets a guiding framework for understanding the effects of land expropriation on the livelihoods of farmers. Guided by the principle of just compensation, indemnity theory stated that governments should be forced to pay just compensation when they implement eminent domain to take private land use rights for development schemes that meet public benefits (Mugisha, 2015). The affected land use right holders should be compensated at full market value of their lost assets. It stresses that, governments should adequately compensate the economic losses the farmers lost due to the expropriation so as to restore their previous livelihoods or resort to alternative livelihood options. Moreover, the government should also mitigate the disruptions that could occur to farmers' livelihoods. The compensation should minimize financial instability by giving the farmers opportunity to shift into alternative jobs. In addition, the indemnity theory emphasizes on the significance of ensuring social justice during the process of land expropriation. Land lost farmers should not be adversely affected due to loss of their land. Maintaining fairness and equity the time of substantial losses to their livelihoods (Kabanga and Mooya, 2022).

While, the Taker's Gain Theory suggests a different perspective, emphasizing on the advantage the government gets by the land expropriation. It asserts that, at the time of expropriation the compensation that government pay should not necessarily equate to the full market value of the lost properties by farmers; rather, the compensation should be proportional to the government's benefit from the land expropriation. It argues that, land lost farmers should be compensated on the basis of the government's net benefits in order to minimize wastage in public resource utilization. For this purpose, compensation should be aligned with the actual gain the government drive by the expropriated land so as to allocate resources more effectively. From a farmer's livelihood perspective, the Taker's Gain Theory acknowledges the government's need to balance economic considerations. This approach recognizes that excessive compensation could potentially hinder public

projects and infrastructure development, influencing the overall economic landscape (Branska, 2017; Kabanga and Mooya, 2022).

2.3.2 The Impoverishment Risks and Reconstruction (IRR) Model

Michael Cernea's Impoverishment Risks and Reconstruction (IRR) Model, introduced in 1997, is a theoretical framework that addresses the challenges faced by communities displaced due to development projects, including those affected by land expropriation. This model is highly relevant in studying the effects of land expropriation on peri-urban farmers' livelihoods, as it identifies the key risks associated with displacement and offers strategies for mitigating these risks through comprehensive reconstruction measures (Cernea, 2000a).

The IRR model outlines eight primary risks that forcefully displaced people face: landlessness, joblessness, homelessness, marginalization, food insecurity, increased morbidity and mortality, loss of access to common property resources, and social disarticulation (Cernea, 2000a). In the context of peri-urban areas like those surrounding Addis Ababa, where urban expansion frequently leads to the displacement of farmers, these risks can severely undermine the livelihoods of affected individuals. For instance, the loss of agricultural land (landlessness) directly impacts farmers' income and food security, while the destruction of homes and community networks (homelessness and social disarticulation) exacerbates the social and economic vulnerabilities of displaced populations.

To address these risks, Cernea's model emphasizes the need for proactive measures that go beyond mere compensation. It advocates for the restoration of land and livelihoods through land-based resettlement options, the creation of employment opportunities, the provision of adequate housing, and the promotion of social integration. In addition, the model stresses the importance of ensuring food security, improving health and sanitation services, and reconstructing social networks to prevent the impoverishment of displaced communities (Cernea, 2000a).

The IRR model's application in the context of land expropriation and peri-urban farmers' livelihoods is crucial for designing resettlement programs that are not only fair but also sustainable. By focusing on the comprehensive reconstruction of displaced individuals'

lives, the model provides a theoretical foundation for policies and practices aimed at mitigating the adverse effects of land expropriation, thereby supporting the long-term well-being and stability of affected communities. However, the model also highlights the challenges of implementation, particularly in contexts with limited resources and weak governance, necessitating strong institutional frameworks and continuous monitoring to ensure the effectiveness of resettlement efforts (Cernea, 2000a).

2.3.3 The World Bank's Operational Policy (OP) 4.12 on involuntary resettlement

The World Bank's Operational Policy (OP) 4.12, issued in 2004, is a key framework guiding the management of involuntary resettlement in development projects. This policy is particularly relevant in contexts where land expropriation is required, affecting the livelihoods of peri-urban farmers. OP 4.12 emphasizes the necessity of avoiding involuntary resettlement where feasible, exploring all viable alternatives before resorting to expropriation. When displacement is unavoidable, the policy mandates that displaced persons must be provided with resettlement assistance and opportunities to improve or at least restore their livelihoods to pre-displacement levels (World Bank, 2004).

The policy outlines specific requirements to ensure that affected populations are not disproportionately harmed by development projects. These include prompt and adequate compensation at full replacement cost, access to grievance mechanisms, and the provision of assistance to vulnerable groups. Importantly, OP 4.12 insists on the preparation of a Resettlement Action Plan (RAP) that details how resettlement will be managed, ensuring transparency and accountability in the process.

In the context of peri-urban areas like Addis Ababa, where rapid urban expansion often leads to the expropriation of agricultural land, OP 4.12 serves as a critical tool to protect the rights and livelihoods of farmers. The policy advocates for comprehensive livelihood restoration programs that not only provide financial compensation but also address the socio-economic needs of displaced persons, including job training, access to new agricultural lands, and support for rebuilding community structures. By enforcing these measures, OP 4.12 aims to mitigate the adverse effects of land expropriation and promote sustainable development that benefits both urban growth and the affected rural communities (World Bank, 2004).

2.4 Empirical Literature Review

Land expropriation, the compulsory acquisition of private land by governments for public purposes, has become an essential yet contentious aspect of urbanization and economic development across the globe. As countries continue to expand their infrastructure and modernize, the balance between public interest and the protection of private land rights remains a complex legal and socio-economic issue. Different countries have developed diverse frameworks to manage land expropriation, each shaped by their unique political, legal, and cultural contexts. However, despite the varying approaches, common challenges such as fair compensation, timely resettlement, and adequate rehabilitation of displaced communities continue to dominate the discourse on land acquisition practices.

Empirical evidence from nations such as China, Rwanda, Ghana, and India provide valuable insights into the evolution of land expropriation policies and their impact on affected populations (Gu, 2022; Mugish, 2015; Mabe et al., 2019; Mukerji, 2017). These countries have enacted reforms aimed at ensuring transparency, fairness, and justice in the expropriation process, with varying degrees of success. For instance, some have emphasized enhancing compensation standards, while others have focused on integrating resettlement programs into broader development goals. Yet, the struggle to align public infrastructure development with the rights and livelihoods of displaced populations persists, reflecting the complexities inherent in balancing state-driven development and individual property rights.

In rapidly urbanizing regions like the South and south-east Asia including China, Vietnam, and in Africa like in Nigeria, Ghana, Rwanda, and Ethiopia, land expropriation is often essential to manage the spatial and demographic burdens associated with rapid urban growth (Johnson and Chakravarty, 2013; Sargeson, 2016; Tagliarino et al., 2018; Msangi, 2011; Ambaye, 2009). However, the implementation process of land expropriation is very contentious and complicated, often leading to conflicts between the government and people affected by the development projects (Sargeson, 2016; Tuan, 2021). Globally, there is a growing emphasis on ensuring that land expropriation practices align with principles of transparency, fairness, and equitable compensation. The World Bank, for instance, emphasizes the importance of resettlement policies that not

only compensate for lost assets but also restore or improve the livelihoods of displaced peoples (World Bank, 2011; WB, 2012; FAO, 2008).

Africa is experiencing one of the fastest rates of urbanization in the world (Turok, 2016). By 2050, it is projected that more than half of the continent's population likely reside in urban areas. This rapid urbanization encounters both opportunities and challenges, particularly in the context of the scarce land use in cities and their peripherals. African cities are growing at unprecedented rates, often necessitating significant land acquisitions to accommodate new developments (Msangi, 2011). In many cases, this has led to extensive expropriation of land, particularly in urban expansion areas where agricultural land is often transformed into complex urban built-up areas such as residential, industrial, recreational uses (Saghir and Santoro, 2018; Turok, 2016; Msangi, 2011).

Ethiopia, like many developing countries, has faced its own set of challenges in navigating land expropriation, particularly within its unique legal and regulatory framework. The need for equitable and efficient land acquisition policies that protect both the public interest and individual landholders is paramount as the country continues to pursue rapid development. By examining global trends and best practices, Ethiopia has the potential to refine its own expropriation processes, addressing the pressing issues of compensation, resettlement, and rehabilitation to ensure a more sustainable and just approach to land acquisition.

2.4.1 Legal, Policy, and Regulatory Frameworks

The legal and policy frameworks governing land expropriation in China, Rwanda, Ghana, India, and Ethiopia exhibit notable differences and similarities, reflecting distinct historical, socio-political, and economic contexts.

In Ethiopia, the primary legislation that guides land expropriation is Proclamation No. 1161/2019, which allows the government to expropriate land for public purposes, subject to the payment of compensation to affected individuals. However, Ethiopia faces challenges in aligning statutory law with customary land tenure systems, particularly in rural areas, where communal and customary landholdings predominate. These customary systems often lack formal titles, complicating the compensation process, similar to challenges seen in Ghana (State Lands Act of 1962) where traditional authorities control

customary lands, necessitating negotiations with chiefs and landholders for compensation (Abdulai, 2020).

a) China

In China, the Land Administration Law mandates that the state owns all land, and land expropriation for public purposes is common, particularly for urbanization and infrastructure projects (Gu, 2022; Zhang and Xu, 2019). Compensation in China is primarily based on the land's location and classification, leading to frequent disputes over undervaluation, a challenge that mirrors Ethiopia's experience, where compensation amounts are often criticized for not reflecting market values. Unlike Ethiopia, where there is an attempt to balance customary and statutory law, China's system is entirely state-controlled, with limited input from landholders. Nonetheless, the Chinese system has pushed for rapid development, though it faces increasing calls for reform to ensure fairer compensation, an issue similarly relevant to Ethiopia (Zhang & Xu, 2019).

b) India

India's Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement Act (LARR) of 2013 represents a significant shift toward more transparent and equitable land acquisition processes (Sharma et al., 2018). The LARR Act mandates that compensation be four times the market value in rural areas and two times in urban areas, alongside robust provisions for resettlement and rehabilitation. Unlike Ethiopia's expropriation process, which does not require prior consent from affected landholders, the Act stipulates that 70% of landholders must consent to acquisitions for public-private projects and 80% for private projects (Hoda, 2018). While Ethiopia's policy guarantees compensation, India's framework provides more comprehensive protections and livelihood restoration, emphasizing community consent, which is not mandated under Ethiopian law (Mukerji, 2017).

c) Ghana

In Ghana, land ownership is predominantly under customary law in rural and peri-urban areas, making land expropriation complex. The State Lands Act of 1962 empowers the government to compulsorily acquire land for public purposes, but the integration of

customary and statutory laws complicates compensation procedures. Customary land transactions often lack formal documentation, similar to Ethiopia's rural areas, where land titles may be informal or non-existent, leading to delays and disputes over rightful ownership (Ubink & Quan, 2008). Compensation disputes in Ghana often arise from the undervaluation of customary land, which is paralleled in Ethiopia, where informal land ownership may result in lower compensation offers.

d) Rwanda

Rwanda's Expropriation Law of 2015 focuses on speeding up the land acquisition process for development projects, with a strong emphasis on public infrastructure growth. Rwanda's system contrasts with Ethiopia's slower and often bureaucratic processes, though both countries mandate compensation for affected landholders. However, in Rwanda, compensation amounts are often lower, and there is less emphasis on resettlement or livelihood restoration compared to frameworks like India's LARR Act (Rose et al., 2016). Rwanda's expropriation model is centralized and efficient, which has allowed for rapid development, although it lacks robust rehabilitation provisions. Ethiopia's framework, while slower, attempts to offer compensation and resettlement, but faces similar challenges in adequately restoring livelihoods (Mugisha, 2015).

2.4.2 The Practice of Compensation and Valuation

In China, the Land Administration Law mandates compensation for land expropriated for public use, but the valuation process has been subject to critique, especially in rapidly urbanizing areas. Compensation is typically based on the land's classification and location, with urban land being valued significantly higher than rural land. This classification-based approach often leads to disputes, as rural landholders argue that the compensation offered does not align with the land's real market value, particularly in areas experiencing rapid urban growth. The limited focus on livelihood loss and the economic potential of the land in valuation has been a source of contention, reflecting issues similar to those seen in Ethiopia and Ghana, where landholders often believe that their compensation is not reflective of the true loss incurred (Gu, 2022; Zhang & Xu, 2019).

India's Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement Act (LARR) of 2013 provides a more structured and transparent framework for compensation and valuation. Under the Act, compensation must be paid at four times the market value in rural areas and two times in urban areas, offering a more generous approach compared to the other countries. This system attempts to address the perceived undervaluation of land by offering additional compensation for distress caused by the expropriation. The Act also provides for a solatium, an additional compensation amount designed to cover the emotional and psychological impact of displacement (Hoda, 2018). The compensation structure in India goes beyond simply valuing the land based on its market price and incorporates broader considerations of the economic and social impacts of land loss, such as livelihood restoration.

In Ethiopia, the compensation framework is governed by Proclamation No. 1161/2019, which provides guidelines for compensating landholders for both the land and any improvements made on it. Despite these guidelines, the process is complicated, particularly in rural areas where formal land titles are often absent. Customary land tenure systems dominate, and the lack of formal documentation in these areas makes it difficult to determine ownership and assess the true value of the land. This results in compensation amounts that are often considered insufficient, especially when the valuation process does not account for the livelihood dependence on the land (Abdo, 2020). Furthermore, the absence of clear procedures for evaluating customary land complicates the issue, particularly in agricultural areas where land is critical to the local economy and livelihoods.

In Ghana, where customary land tenure systems are also prevalent, similar challenges arise. The State Lands Act of 1962 governs the process, requiring the government to pay fair compensation to landholders when land is expropriated for public purposes. However, the lack of formal documentation for customary land creates significant difficulties in determining rightful ownership and land valuation. Chiefs or traditional leaders often hold land in trust for their communities, and compensation disputes frequently arise when landholders feel that the compensation offered does not reflect the land’s true value. This situation is exacerbated by the fact that customary lands are often undervalued compared to formally titled lands, resulting in dissatisfaction among

landholders, who perceive the process as biased or lacking transparency (Mabe et al., 2019; Ubink & Quan, 2008).

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Rwanda's Expropriation Law of 2015 outlines similar compensation requirements but has faced challenges in adequately valuing land. Compensation is based on the land's current use rather than its potential market value, which can lead to lower compensation amounts. This method, much like in Ethiopia and China, has been criticized by landholders, particularly those in rural areas, where the economic and livelihood significance of the land is not accurately reflected in the compensation offered. The

process is further complicated by the fact that resettlement and compensation provisions often do not include measures for restoring livelihoods lost due to land acquisition (Rose et al., 2016).

2.4.3 Resettlement and Livelihood Restoration

China's resettlement policies, governed by the Land Administration Law, provide for relocation and compensation, but livelihood restoration is not always adequately addressed. Rural farmers who are displaced often find it difficult to transition to new forms of employment, especially in urban areas where they may lack the skills necessary for non-agricultural jobs (Yang & Qian, 2022). Although the government has made efforts to provide housing and some social services in resettlement areas, displaced populations often face challenges in securing long-term livelihoods. The economic value of land in rural China, particularly for agricultural purposes, is not easily replaced, and the resettlement process does not always include comprehensive livelihood support programs to address this gap. Consequently, displaced individuals may experience long-term financial insecurity and social dislocation.

India's Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement Act (LARR) of 2013 stands out for its strong emphasis on resettlement and livelihood restoration. The Act requires that displaced families receive not only compensation for their land but also access to alternative livelihoods. This includes the provision of housing, financial grants, and employment opportunities for at least one family member in the project for which the land was acquired (Behera, 2020). Furthermore, the Act mandates the restoration of living standards to pre-acquisition levels, if not improved, through comprehensive resettlement plans. However, the implementation of these provisions varies across states, and challenges such as delays and inadequate infrastructure at resettlement sites can still hinder the effectiveness of livelihood restoration efforts (Hoda, 2018).

Resettlement and livelihood restoration are crucial components of land expropriation, especially in contexts where displacement affects individuals' socioeconomic conditions and long-term well-being. In Ethiopia, Proclamation No. 1161/2019 provides some guidelines for resettlement, but the effectiveness of these provisions is often questioned.

Displaced individuals, particularly those from rural areas, frequently find themselves relocated to areas that lack adequate infrastructure and access to services such as water, healthcare, and education (Abdo, 2020). This situation can severely disrupt agricultural livelihoods, as land allocated for resettlement may not be suitable for farming, leading to a decline in income and food security. While there is a requirement for compensation to cover lost livelihoods, the implementation of livelihood restoration programs remains insufficient, leaving many affected households' worse off post-expropriation.

In Ghana, similar challenges are observed in the resettlement process, as the infrastructure at resettlement sites is often underdeveloped, and the distance from the original land can disrupt agricultural practices and social networks. Customary landholders, particularly in rural and peri-urban areas, face significant challenges in restoring their livelihoods after displacement. Traditional authorities play a role in negotiating compensation, but there is little emphasis on long-term livelihood restoration. The lack of formal support mechanisms for restoring economic stability post-resettlement exacerbates the social and economic impacts of land expropriation (Ubink & Quan, 2008). In many cases, resettlement programs fail to provide access to comparable or better agricultural land, making it difficult for displaced communities to regain their previous standard of living.

In Rwanda, the Expropriation Law of 2015 also mandates compensation and resettlement for displaced persons, but the focus on livelihood restoration is less pronounced. While the law provides for monetary compensation and resettlement to alternative sites, the process often fails to adequately address the long-term economic needs of displaced individuals. The land allocated for resettlement is frequently of lower quality, making it difficult for farmers to sustain their agricultural activities (Rose et al., 2016). Moreover, the infrastructure and services at resettlement sites are often insufficient, limiting the ability of displaced communities to rebuild their livelihoods. As a result, many individuals struggle to achieve economic stability after relocation, and the social impacts of displacement can be long-lasting.

2.4.4 Public Participation and Consent during Land Expropriation

Public participation and consent are critical factors in land expropriation, influencing the extent to which affected communities can engage in and agree to the processes that lead to displacement and compensation. In Ethiopia, Proclamation No. 1161/2019 outlines the legal framework for land expropriation, including some provisions for public participation. However, the level of meaningful community involvement remains limited. While the law allows for the notification of affected parties and a grievance redress mechanism, it does not require prior consent from landholders before land can be expropriated. This has led to tensions, particularly in rural areas, where communities feel excluded from decisions that significantly impact their livelihoods and land rights (Gashu, 2020). The lack of sufficient public consultation often results in dissatisfaction with the process, particularly regarding compensation and resettlement outcomes.

Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement Act (LARR) of 2013 marks a significant shift toward greater public participation in land expropriation in India. One of the most progressive aspects of the Act is the requirement for prior consent from a substantial proportion of affected landholders 70% for public-private projects and 80% for private projects (Sharma et al., 2018). This emphasis on obtaining consent ensures that affected communities have a direct say in the land acquisition process. Public hearings are mandatory, and social impact assessments are conducted to determine the consequences of expropriation on local communities. Despite these provisions, implementation varies across states, with some states diluting these participatory mechanisms through amendments that reduce the consent requirements or bypass them entirely (Behera, 2020).

The legal framework for land expropriation, governed by the Land Administration Law, does not provide for explicit public consent in the acquisition process in China. While local governments conduct consultations, these are often seen as procedural rather than substantive. Rural land in China is typically owned collectively, and local governments can requisition it for urban development without the direct approval of individual landholders (Xie, 2019). Although there are mechanisms for affected parties to express grievances, the lack of a formal consent process means that public participation remains

limited. This has often led to social unrest, as communities resist land acquisitions that they perceive to be unfair or inadequately compensated.

The 2015 Expropriation Law of Rwanda includes provisions for public participation, requiring consultation with affected landholders before expropriation can proceed. The law mandates that public interest must be clearly established, and individuals have the right to contest expropriation decisions if they believe their rights are being violated. However, while public hearings are part of the process, the decision-making power largely rests with government authorities, and there is no requirement for prior consent from affected communities. The absence of a binding consent requirement limits the degree of actual public participation, particularly in rural areas where landholders may lack the resources or legal knowledge to effectively challenge expropriation decisions (Rose et al., 2016).

Public participation in land expropriation is relatively limited, particularly in rural areas where customary land tenure systems dominate in Ghana. The State Lands Act of 1962 allows the government to acquire land for public purposes, often without requiring formal consent from landholders. While chiefs and traditional leaders play a role in negotiations, there is no legal requirement for widespread community consultation or consent. This has led to instances where communities feel marginalized from the expropriation process, especially in areas where land is a primary source of livelihood. The lack of formal mechanisms for public involvement has contributed to discontent and challenges in the implementation of land acquisition projects (Ubink & Quan, 2008).

2.4.5 Implementation Challenges and Institutional Capacity

Implementation challenges and institutional capacity are key factors influencing the effectiveness of land expropriation processes across different countries, including Ethiopia. In Ethiopia, the Expropriation, Compensation, and Resettlement Proclamation No. 1161/2019 outlines the procedures for land acquisition, but the capacity to implement these laws consistently across regions remains a significant challenge. Limited institutional resources, inadequate technical expertise, and bureaucratic inefficiencies often slow down the expropriation process and affect the delivery of compensation and resettlement services. Local governments, which are primarily responsible for enforcing

the proclamation, frequently lack the financial and administrative capacity to carry out these responsibilities effectively. This has led to delays in project implementation and dissatisfaction among displaced communities (Gashu, 2020; Dires et al., 2021).

The experience of India also highlights similar challenges, despite having a more robust legal framework with the LARR Act of 2013. The decentralized nature of land acquisition in India means that state-level authorities are responsible for implementation, but these authorities often face resource constraints, especially in less developed regions. The varying levels of institutional capacity across states have resulted in inconsistent application of the LARR Act's provisions, particularly in terms of public participation and compensation delivery. While some states have successfully implemented the law, others have diluted its provisions, leading to disparities in how landholders are treated across the country (Behera, 2020). This inconsistency is compounded by bureaucratic hurdles, corruption, and political interference, which undermine the effectiveness of the land acquisition process (Sharma et al., 2018).

Despite its strong state machinery, also faces significant implementation challenges due to the centralized nature of its land expropriation process. The Land Administration Law provides local governments with considerable power to requisition land, but the rapid pace of urbanization has outstripped the institutional capacity to manage land acquisitions effectively. Local authorities often prioritize economic development over the concerns of displaced communities, leading to widespread dissatisfaction and protests. Additionally, the lack of transparent mechanisms for compensation valuation and resettlement exacerbates these issues. While China has invested in building its institutional capacity, the scale of its urbanization efforts means that these challenges persist, particularly in rural areas where local governance is weaker (Zhang & Xu, 2019).

The 2015 Expropriation Law of Rwanda provides a clearer legal framework for land expropriation, but its implementation is hampered by the limited institutional capacity of local governments, especially in rural areas. Although Rwanda has made strides in building its administrative infrastructure, the process of land acquisition remains fraught with delays, particularly in providing compensation and ensuring effective resettlement. Local authorities often lack the necessary resources and training to enforce the law's

provisions, leading to inconsistencies in how land acquisition is carried out. This can undermine the credibility of expropriation processes and exacerbate social tensions in communities where land is a vital resource for livelihoods (Rose et al., 2016).

The State Lands Act of 1962 vests the power of land acquisition in the government of Ghana, but the institutions responsible for its implementation often lack adequate resources and technical expertise. In areas governed by customary land tenure systems, the intersection of traditional authority and formal government processes creates additional complexity. Chiefs and local leaders may have different priorities or face pressure from community members, leading to disputes and delays in the expropriation process. Moreover, Ghana's institutions often struggle with transparency and accountability, further complicating efforts to ensure fair compensation and effective resettlement (Ubink & Quan, 2008).

2.4.6 Lessons Learned for Ethiopia from International Experiences

Based on the empirical literature review of land expropriation practices in China, Rwanda, Ghana, and India, several lessons can be drawn to enhance Ethiopia's approach to land expropriation, particularly in addressing challenges related to legal frameworks, compensation, resettlement, and public participation.

Customary and Statutory Law Integration: Like Ghana and Ethiopia, where customary land tenure systems are prevalent, China's approach of centralized state control contrasts sharply with Ethiopia's mixed system. Ethiopia could benefit from clearer guidelines on integrating customary land tenure with statutory regulations. This could involve formalizing customary land rights to facilitate more accurate compensation and reduce disputes.

a) Transparent and Comprehensive Legislation:

India's Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement Act (LARR) of 2013 exemplifies a robust legislative framework that includes detailed provisions for compensation and resettlement. Ethiopia might consider enhancing its legal framework to ensure more comprehensive coverage of

land expropriation, particularly by incorporating aspects like community consent and detailed valuation methodologies.

b) Enhanced Valuation Methods:

The compensation issues in Ethiopia resemble those in China and Ghana, where land valuation often fails to reflect market value or the true economic impact of displacement. Adopting practices similar to India's LARR Act, which includes multiple compensation tiers and considers emotional distress, could improve fairness. Implementing a valuation system that comprehensively considers both land and livelihood losses could lead to more equitable outcomes.

c) Improving Compensation Mechanisms:

Given the issues faced in Rwanda with undervaluation and inadequate compensation, Ethiopia should aim to ensure that compensation not only reflects market values but also adequately covers the livelihood impact. This might involve regular reviews of compensation rates and incorporating feedback from affected communities.

d) Comprehensive Resettlement Plans:

The experience in India underscores the importance of not only compensating for land but also facilitating access to alternative livelihoods. Ethiopia can improve its resettlement strategies by ensuring that displaced communities receive comprehensive support, including housing, employment opportunities, and access to basic services. Learning from India's emphasis on restoring living standards to pre-acquisition levels could help Ethiopia develop more effective livelihood restoration programs.

e) Infrastructure Development:

The challenges in Ghana and China highlight the need for adequate infrastructure at resettlement sites. Ethiopia should prioritize developing resettlement areas with essential services and infrastructure to prevent the disruption of livelihoods and social networks. Ensuring that new sites are comparable or superior to the original locations in terms of agricultural potential and community facilities is crucial for successful resettlement.

f) Mandating Community Consent:

India's approach, which requires obtaining consent from a significant percentage of landholders, represents a progressive model for involving affected communities. Ethiopia could consider implementing similar consent requirements to ensure that expropriation processes are more democratic and inclusive. This could involve formalizing procedures for public hearings and incorporating community feedback into decision-making processes.

g) Enhancing Public Consultation:

While Rwanda and Ghana have some provisions for public participation, these often lack binding impact on the final decisions. Ethiopia should strive to enhance public consultation mechanisms, ensuring that affected communities have meaningful opportunities to participate in and influence the expropriation process. This includes not only notifying affected individuals but also actively seeking their input and addressing their concerns in a transparent manner.

2.5 Research Gap

A key research gap in the study of land expropriation and its effects on the livelihoods of farmers in Addis Ababa, Ethiopia, lies in the insufficient examination of the practical implementation of legal and policy frameworks governing land expropriation, compensation, and resettlement. While existing literature covers the legal provisions, such as the FDRE Constitution and various proclamations, there is limited empirical analysis on how these policies are applied in real-world scenarios, particularly regarding the adequacy of compensation and the effectiveness of livelihood restoration programs.

Furthermore, the dynamic interaction between urbanization, LULC changes, and expropriation has been explored in broad terms, but few studies have specifically focused on Addis Ababa's rapid urban expansion and its direct impact on peri-urban farmers. Additionally, while socio-economic impacts are often mentioned in previous studies, there is a lack of detailed assessments that combine both quantitative and qualitative data to measure the long-term effects of land loss on farmers' livelihoods and their adaptive capacity post-expropriation.

Lastly, although resettlement and livelihood restoration efforts are discussed in policy documents, there is limited research evaluating the success or failure of these programs from the perspective of affected farmers. This study aims to fill these gaps by providing a comprehensive analysis of the legal frameworks, urbanization dynamics, socio-economic impacts, and the effectiveness of resettlement programs in restoring the livelihoods of displaced farmers in Addis Ababa.

2.6 Conceptual Framework

The conceptual framework for the study on the effects of land expropriation on the livelihoods of farmers in Addis Ababa, Ethiopia, is a comprehensive model that integrates four interrelated components: legal and policy frameworks, urbanization and land use/land cover (LULC) changes, socio-economic effects of expropriation, and resettlement and livelihood restoration supports. These components are interconnected and together form the foundation for understanding how land expropriation affects the lives of farmers, both directly and indirectly.

The first component, the legal and policy frameworks, serves as the foundation of the entire process. These frameworks determine how land expropriation is carried out, setting the rules for compensation, the definition of public purpose, and the rights of displaced individuals. In the context of Addis Ababa, the primary laws include the FDRE 1995 Constitution, Proclamation No. 455/2005, and Proclamation No. 1161/2019, which establish the legal conditions under which the government can expropriate land for urban development. These policies guide the entire expropriation process, including how land is valued, how much compensation is provided, and what resettlement measures are put in place for affected farmers. However, the interaction between legal frameworks and practice is critical; while policies may outline fair procedures, their implementation may fall short, leading to gaps in compensation and support. Thus, the effectiveness of the legal and policy frameworks has a direct effect on the subsequent components of the conceptual framework, particularly the socio-economic effects on farmers and the adequacy of resettlement and livelihood restoration.

The second component, urbanization and LULC changes, directly interacts with and is shaped by the legal frameworks. Urbanization in Addis Ababa has been rapid, expanding into peri-urban and rural areas where farming communities reside. As the city grows, demand for land for housing, infrastructure, and commercial purposes increases, leading to more occurrences of expropriation. This dynamic of urbanization is not isolated, it is deeply influenced by policy decisions. Urban expansion is facilitated by legal tools that enable the government to acquire land, often at the expense of farming communities. As LULC changes occur, agricultural land is transformed into urban developments, causing significant disruption to the livelihoods of farmers who depend on the land for their income and food production. The interaction between urbanization and land use change creates pressure on rural-urban interfaces, where farmers are more vulnerable to expropriation. This transformation, driven by legal frameworks that prioritize urban development over agricultural sustainability, further exacerbates the socio-economic effects on farmers.

The third component, socio-economic effects of expropriation, focuses on the direct impact that land loss has on farmers' livelihoods. When land is expropriated, farmers not only lose their primary asset land but also the source of their income, employment, and often their identity. The socio-economic effects are a product of the interaction between expropriation laws and the changing urban landscape. Insufficient compensation, as dictated by valuation methods that may not reflect full replacement costs, can leave farmers without the financial means to recover from the loss of their land. Additionally, expropriation can lead to both economic displacement (loss of income and employment) and social displacement (loss of community, culture, and social networks). The inadequacies in the legal frameworks, such as unclear compensation policies and delayed payments, intensify these socio-economic effects. Without effective legal protection, farmers may find themselves excluded from the benefits of urban growth, while bearing the brunt of its negative impacts.

The final component, resettlement and livelihood restoration supports, plays a critical role in mitigating the negative socio-economic effects of expropriation. In theory, resettlement programs should provide displaced farmers with adequate compensation, housing, and alternative means of livelihood. However, in Addis Ababa, the effectiveness

of resettlement programs has been limited, with many farmers reporting insufficient support to restore their livelihoods. This component interacts closely with both the legal frameworks and the socio-economic outcomes of expropriation. Resettlement and livelihood restoration are supposed to be guided by legal frameworks that ensure fair treatment of displaced persons, but if these frameworks are weak or poorly implemented, the support mechanisms fall short. For example, if compensation is inadequate or resettlement programs do not provide viable alternative employment, farmers may find it difficult to adapt to their new circumstances, exacerbating the socio-economic harm caused by expropriation.

The relationship among these components is cyclical and interdependent. Legal and policy frameworks drive the expropriation process, which in turn is influenced by the dynamics of urbanization and LULC changes. As the city expands and land is increasingly expropriated, the socio-economic effects on farmers become evident, with the degree of impact depending on the adequacy of compensation and support. Resettlement and livelihood restoration supports then act as a response to these socio-economic impacts, ideally aimed at mitigating them. However, the success of these measures is again dependent on the strength and implementation of the legal frameworks that govern them. If the legal provisions are insufficient, the cycle continues, with displaced farmers facing ongoing economic hardship and social disruption.

Therefore, this conceptual framework offers a holistic view of how land expropriation in Addis Ababa affects farmers' livelihoods. It shows that the legal and policy frameworks set the stage for expropriation, which is accelerated by urbanization and LULC changes. The socio-economic effects are shaped by the extent to which these frameworks protect farmers, and the resettlement and livelihood restoration supports are essential for mitigating these impacts. The interaction among these components highlights the complex and multifaceted nature of land expropriation, emphasizing the need for strong legal protections, fair compensation, and effective livelihood restoration measures to ensure that displaced farmers are not left worse off in the process.

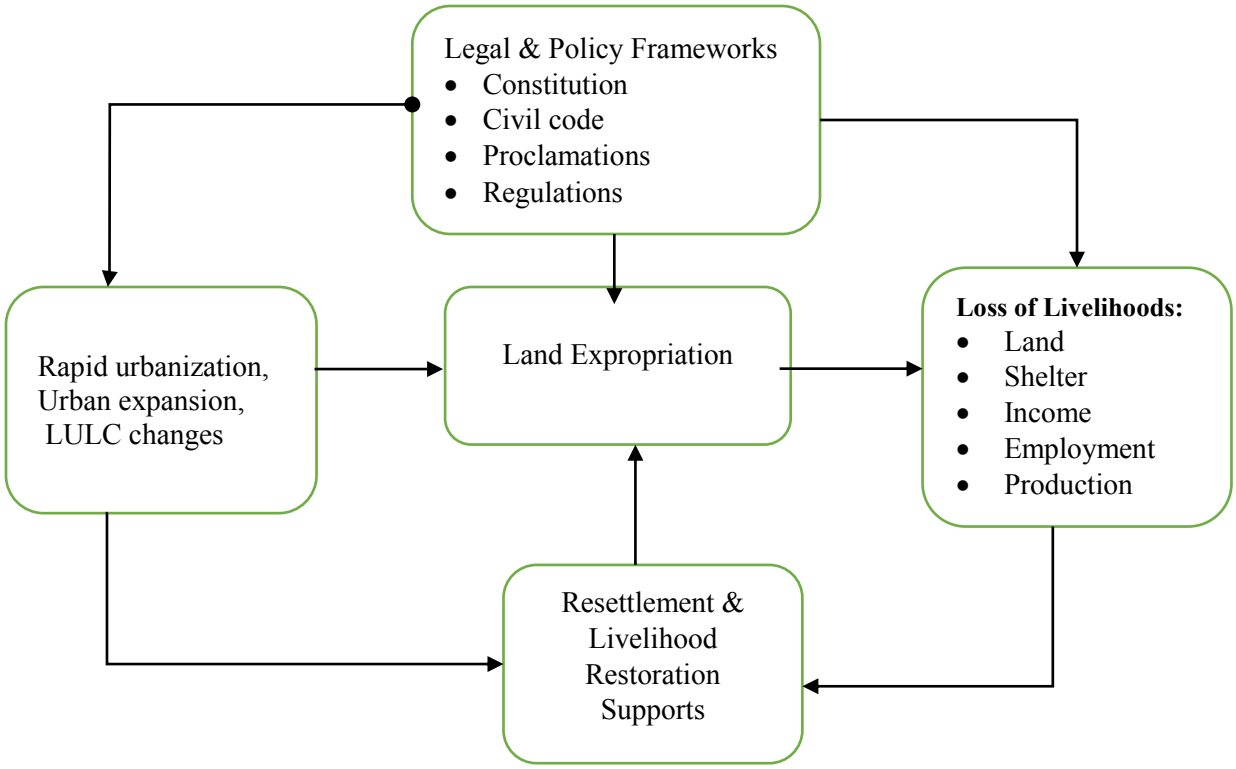

Figure 2.1: Conceptual Framework of the Study

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This study examines the impact of land expropriation on farmers in Addis Ababa, Ethiopia, with a particular emphasis on its effects on the livelihoods of expropriated farmers in four selected sub-cities. This chapter presents a detailed discussion of the research methodology used for this study. First, a thorough description of the study area is provided, setting the geographical and contextual foundation for the research. It is followed by a discussion of the research design, outlining the overall approach. The subsequent section addresses the data sources, identifying and distinguishing between primary and secondary data utilized in the analysis. The sampling techniques used to select study participants are also explained, to ensure that the sample represents the wider population. The methods of data analysis are then presented, illustrating how the data was interpreted and integrated to draw meaningful conclusions. Lastly, the reliability and validity of the study's data were critically discussed to reinforce the credibility and robustness of the research findings.

3.2 Description of the Study Area

3.2.1Historical Overview of Addis Ababa

Addis Ababa, the capital and largest metropolitan city of Ethiopia, was established in 1886 by Emperor Menelik II and Empress Taytu. The city’s foundation marked a significant shift from the earlier capital in “Entoto”, prompted by the empress's advocacy for a warmer, more hospitable location. Following its occupation by Italian forces in 1936 and subsequent liberation in 1941, Addis Ababa underwent extensive reconstruction. By the 1960s and 1970s, it emerged as a key center for political and cultural activities, becoming the headquarters of the Organization of African Unity (OAU) in 1963, which later evolved into the African Union (AU) in 2002. The city continued to modernize and expand, particularly after the Ethiopian People's Revolutionary Democratic Front (EPRDF) came to power in 1991, leading to significant urban development (Zewde, 2002).

3.2.2 Location

Addis Ababa is geographically located at the heart of Ethiopia, specifically at a latitude of 9°1′48″N and a longitude of 38°44′24″E, making it a central and significant hub in the nation. Covering an expansive area of 540 square kilometers, the city's location contributes to its importance as the country's political, economic, and cultural city. Not only is it the administrative center of the country, but its central location also facilitates connectivity across Ethiopia and the wider African continent. Addis Ababa's topography is equally notable, as it ranks as the third-highest capital city in the world, after La Paz and Quito in Latin America. The city's elevation varies significantly, from 2,100 meters around Akaki in the south to 3,000 meters at the famous Entoto Hill in the north. This elevation provides the city with a cool, temperate climate, contributing to its appeal as a desirable location for both residents and businesses. The high-altitude location also influences its unique ecological and environmental conditions, making it a distinctive urban area compared to many other cities in Africa. Addis Ababa's geographical and topographical features not only enhance its strategic importance but also reinforce its role as a prominent city both nationally and regionally, further underscoring its historical and contemporary significance (Wubneh, 2013).

3.2.3 Population

The current estimates of Addis Ababa's population exceed 5.6 million, accounting for roughly 25% of Ethiopia's urban population (World Population Review, 2024). The city is among Africa's rapidly growing urban centers, with projections indicating that its population may double in the next 10 to 15 years (Graetz et al., 2016; CSA, 2013). This population growth is driven by factors such as rural-urban migration, economic opportunities, and educational advancements. The city's role as a major economic hub is highlighted by its contribution of approximately 50% to the nation's GDP (UN-Habitat, 2017).

Table 3.1 Population growth of Addis Ababa (2010-2025)

Year	Population	GR	Growth
2010	3,126,469	4.36%	130,722
2011	3,262,895	4.36%	136,426
2012	3,405,475	4.37%	142,580
2013	3,553,866	4.36%	148,391
2014	3,708,942	4.36%	155,076
2015	3,870,785	4.36%	161,843
2016	4,039,927	4.37%	169,142
2017	4,215,965	4.36%	176,038
2018	4,399,674	4.36%	183,709
2019	4,591,983	4.37%	192,309
2020	4,793,699	4.39%	201,716
2021	5,005,524	4.42%	211,825
2022	5,227,794	4.44%	222,270
2023	5,460,591	4.45%	232,797
2024	5,703,628	4.45%	243,037
2025	5,956,679	4.44%	253,051

(Source: World Population Review, 2024)

3.2.4 Administration

Addis Ababa city has a three-level administrative structure; the city administration, sub-cities, and woredas. The city is divided into eleven sub-cities, each functioning as the second level of administration next to the city government. The largest of these sub-cities in terms of area is Bole, followed by Akaki-Kality and Yeka which accommodate the expansion areas of the city. Addis Ketema is the smallest, with Lideta and Arada also being among the smaller and centrally located sub-cities. A new sub-city, Lemi Kura, has recently been established by splitting sections from the Bole and Yeka sub-cities. Then, each sub-city is subdivided into woredas, the smallest administrative units, totaling approximately 116 woredas across the city. The number of woredas varies based on the size and population of each sub-city (Central Statistical Agency [CSA], 2013).

This study focused on four sub-cities; Yeka, Bole, Akaki-Kality, and Nifas-Silk Lafto. These sub-cities were selected because of their central role in Addis Ababa's urban expansion and the considerable number of expropriated farmers. Bole is recognized for its extensive commercial and residential developments, while “Akaki-Kality” serves as a hub for industrial activities. Yeka exhibits a mix of residential, commercial, and educational institutions, and Nifas-Silk Lafto is notable for its high concentration of displaced farmers. The selection of these sub-cities is based on their relevance to the city's growth dynamics and the effect of land expropriation on local farmers' livelihoods. A detailed map illustrating these sub-cities is provided in (Figure 3.1) to highlight the study areas.

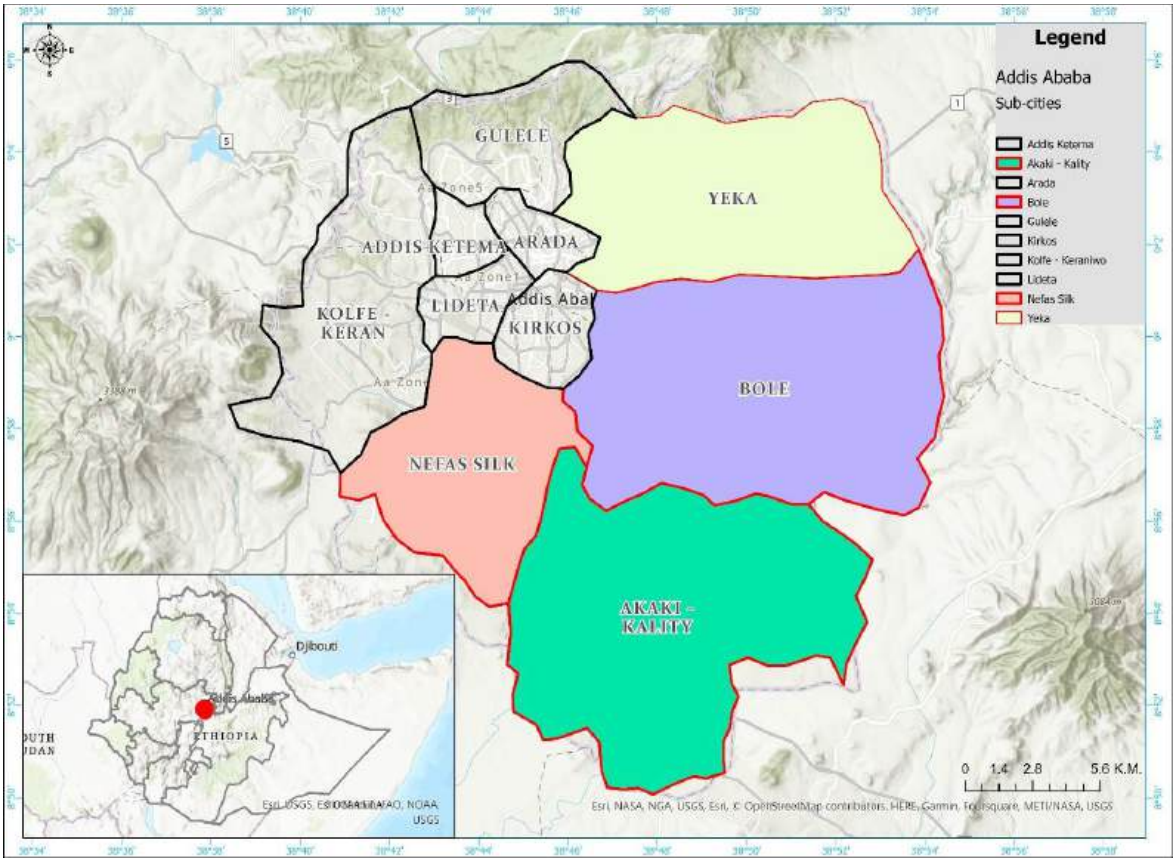

Figure 3.1 Location Map of the Study Area

3.3 Research Design

3.3.1 Research Philosophy

The study used pragmatism as a guiding research philosophy. Pragmatism is employed as an appropriate research philosophy for this study due to its emphasis on practical solutions and flexibility in integrating both qualitative and quantitative research approaches (Kaushik & Walsh, 2019). Pragmatism is used as a philosophy since the study intended to review and analyze legal and policy frameworks, examine the dynamics of urbanization and land use changes, assess the socio-economic impact of land expropriation on farmers, and evaluate livelihood support mechanisms. The study requires a mixed-methods approach. Pragmatism is well-suited to this study because it prioritizes the use of the most effective methods to address complex, real-world problems, rather than adhering to a rigid methodological framework. Additionally, pragmatism's focus on actionable outcomes aligns with the study's purpose of providing policy recommendations and practical insights to improve land expropriation and resettlement processes. The philosophy allowed the researcher to adapt the methodology to the context, ensuring a comprehensive and flexible analysis of legal, social, and economic issues (Kaushik & Walsh, 2019).

3.3.2 Research Design

The study used a descriptive research type, survey research strategy with cross-sectional research design to examine data collected at a single point in time, that offers the picture of the current practices of land expropriation and their immediate effect on the livelihoods of farmers in the study area. The research design helped to capture a holistic view of the land expropriation process, including its effects on farmers' livelihoods and the adequacy of resettlement support mechanisms. This comprehensive design ensured a detailed understanding of the complex interactions between land expropriation, urbanization, and socio-economic outcomes in Addis Ababa City.

3.3.4 Research Approach

The research employs a mixed-methods approach, integrating both quantitative and qualitative research approaches to provide a comprehensive analysis of land expropriation in Addis Ababa City, Ethiopia. The study applied a descriptive research type, with a survey research strategy, and a cross-sectional time dimension. The mixed approach aligns with the pragmatist paradigm, which supports the use of diverse methodologies to address the research questions effectively.

The quantitative approach allowed the collection and analysis of survey data from expropriated farmer households across four selected sub-cities. This part is used to quantify the effect of land expropriation on these households, focusing on the scope of land use and land cover (LULC) changes and their socio-economic effects. While, the qualitative approach was used to conduct interviews with key informants (KIs) and focus group discussions (FGDs) with affected farmers, their representatives, and relevant officials and experts. This qualitative analysis is used for an in-depth insight into the lived experiences of the expropriated farmers and the effectiveness of resettlement and livelihood restoration efforts made by the city administration.

Moreover, the qualitative data collected through focus group discussions (FGDs) and interviews were essential in shaping this study. The experiences and perceptions of the displaced farmers, along with their views on government interventions, were critical for the broader quantitative analysis and discussion.

3.4 Sampling Design

3.4.1 Sampling Techniques

The study employed a multi-stage sampling technique to realize a representative sample of the expropriated farmers within the selected four sub-cities of Addis Ababa City (i.e. Yeka, Bole, Akaki-Kality, and Nifas Silk Lafto). The multi-stage sampling approach combined both non-probability (purposive) and probability (systematic random) sampling methods.

At the initial stage, purposive sampling was used to select the four sub-cities; Yeka, Bole, Akaki-Kality, and Nifas-Silk Lafto based on their significant levels of horizontal urban expansion and the extent of land expropriation activities. Then, within these sub-cities, specific woredas specifically woreda 12 and 13 from Yeka, woreda 10, 11, and 12 from Bole, woreda 04, 09 and 10 from Akaki-Kality and Jemo 01, Labu 02 and woreda 11 from Nifas Silk sub-cities were also purposively selected based on the number of expropriated farmers. Purposive sampling allows the intentional selection of samples that are most relevant to the study (Rai and Thapa, 2015; Suen et al., 2014).

Then, within the selected woredas, using the lists of expropriated farmers from each woreda as a sample frame, random sampling was employed to select individual farmer households for the survey. Random sampling was chosen to minimize selection bias, providing each household an equal chance of being included in the study, and ensuring that the sample is representative of the larger population within each sub-city and woreda (Mostafa & Ahmad, 2018). By applying this sampling technique, the study attained samples that provided statistically significant insights into the socio-economic effects of land expropriation on farmers and evaluated the resettlement, and livelihood restoration supports provided.

3.4.2 Sampling Population

The target population for this study has consisted of farmer households that had been affected by land expropriation in the selected sub-cities of Addis Ababa City. According to the data obtained from the city's Farmers' Rehabilitation and Urban Agriculture Project Office, hereafter (FRUAPO) in 2019, a total of 5,891 farmer households were identified as having been expropriated in the four sub-cities. These households were used as the target population for this study, representing those directly affected by the city's urban expansion and land expropriation measures.

3.4.3 Sampling Size

The sample size for this study was determined using Kothari’s (2004) formula for sample size calculation, which is designed to ensure a representative sample with a 95% confidence level and a 5% margin of error. The sample size calculation was based on the

total target population of expropriated farmer households across the four sub-cities using a sampling formula as follows;

$$\boldsymbol{n = \frac{Z^2.\ pq}{d^2}}$$

Where:

- n = sample size
- Z = Z-value (1.96 for 95% confidence level)
- p = estimated proportion of the population (assumed to be 0.5 for maximum variability)
- q = 1 – p = 1-0.5 = 0.5,
- e = margin of error (0.05),
- N = population size (5,891)

$$\boldsymbol{n = \frac{Z^2 \cdot pq}{\left(d^2\right)}}$$

$$\underline{\text{n } = \ (\mathbf{1.96})^2\ (\mathbf{0.5}) * (\mathbf{0.5})}$$

$$\mathbf{(0.05)^2}$$

$$\frac{\mathbf{3.8416(0.25)}}{0.0025} = \ 384.16$$

Then, n for a finite population = $n/1 + n/N \ = \ 384.16/1 + 384.16/5891$

$384.16/1.0652 =$ **361**

Therefore, based on the above formula, the total sample size calculated was 361 households. This sample size was then proportionally allocated across the four sub-cities, ensuring that each sub-city's sample size corresponds to its share of the total population of expropriated households. The proportional allocation was calculated as follows: $\boldsymbol{n = Ni/N \times n}$

Where:

- ni = sample size for sub-city i
- Ni = population size for sub-city i
- N = total population size (5,891)
- n = total sample size (361)

Table 3.2: Summary of proportional sample size allocation across the sub-cities

Sub-City	Target Population (Ni)	Proportional Sample Size (ni)
Yeka	838	51
Bole	2,089	128
Akaki-Kality	1,410	87
Nifas-Silk Lafto	1,554	95
Total	**5,891**	**361**

(Source: FRUAPO, 2020)

3.5 Data Types and Sources

The study used both primary and secondary data types to collect in-depth information on land expropriation and its effects. Moreover, spatial information was also used to analyze the land use land cover dynamics in the city pertinent to the city's rapid urbanization and the subsequent land expropriation from farmers in the expansion areas.

3.5.1 Primary Data Sources

Primary data for the study was collected directly from expropriated farmer households through structured questionnaires, key informant interviews, and focused group discussions. Field visits were also conducted to observe the current land use and resettlement conditions in the study areas.

3.5.2 Secondary Data Sources

Secondary data sources for the study were various published and unpublished documents, including reports and information from the Farmers' Rehabilitation and Urban Agriculture Project Office, urban renewal offices, land bank, and land development and management Offices, legal and regulatory documents such as the FDRE Constitution, the civil code, proclamations, regulations, and structure plan of the city as well as Addis Ababa's twenty years land use and land cover change data from the Global Land Cover and Land Use Change (GLAD) datasets for LULC change detection. Data sources such as the World Bank's Involuntary Resettlement Policy, OP/BP 4.12, along with various legal, regulatory, policy, and implementation documents from Addis Ababa, Ethiopia. Additionally, the research utilizes books, published articles, and unpublished documents to support the analysis. This mixed-methods approach allowed the study to address the

research questions with both depth and breadth, ensuring a thorough examination of the complex issues surrounding land expropriation, livelihood restoration, and government responses in Addis Ababa.

3.6 Methods of Data Collection

This study employed a combination of both primary and secondary data collection methods to gather detailed and reliable data. The primary data was collected through surveys, key informant interviews, Focus Group Discussions, GIS, and Remote Sensing techniques. The details of the data collection methods are discussed as follows;

3.6.1 Survey Questionnaire

The primary instrument for data collection in this study was a survey questionnaire designed to assess farmers' perceptions and experiences regarding expropriation, government initiatives for resettlement, and livelihood restoration. The questionnaire was divided into two main sections. The first section was used to gather the socio-economic and demographic information about the farmers who were relocated and compensated, to obtain crucial context on their experiences. The second section was precisely structured to evaluate farmers' perceptions and experiences related to the government's resettlement and livelihood restoration support. This section includes 21 independent variables organized into five key categories: Compensation (5 questions), Land and Infrastructure (4 questions), Income and Employment (4 questions), Social and Community Networks (4 questions), and Development Assistance (4 questions). These categories directly relate to the government's livelihood restoration efforts, while also indirectly influencing the dependent variable through mediating factors, particularly the farmers' perceived economic security.

The survey employed a 5-point Likert Scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), to measure the relationship between the independent variables, the mediating variables, and the dependent variable. This carefully designed survey instrument enables a comprehensive analysis of the factors that shape farmers' perceptions and experiences, providing valuable insights into the effectiveness of government interventions.

3.6.2 Key Informant Interview

Two key informant interviews were conducted with 16 participants, including officials and experts, valuators in the four sub-cities and woredas, and farmers representatives, who have key roles and in-depth knowledge about the land expropriation process. These interviews provided qualitative insights into the policy, legal frameworks, and implementation practices of land expropriation in Addis Ababa. They also share their views and experiences about the adverse effects of the expropriation and the resettlement and livelihood restoration supports.

3.6.3 Focused Group Discussions

Two Focus Group Discussions were held with groups of six to ten expropriated farmers in two selected sub-cities; Bole and Nifas-Silk Lafto, ensuring the representation of elders, women, and youths. The FGDs helped to get an in-depth understanding of the farmers on the impacts of land expropriation, including the social and economic challenges faced by the farmers.

3.6.4 Document Review

Various relevant documents such as the World Bank's Involuntary Resettlement Policy, OP/BP 4.12, along with various legal, regulatory, policy, and implementation documents from Addis Ababa, Ethiopia were reviewed. Additionally, various books, published articles, and unpublished documents were also reviewed to enrich the data for the analysis.

3.6.5 GIS and Remote Sensing for LULC Change Detection

Moreover, to better understand urbanization in the study area, land use and land cover change detection analysis tools were used. The study used global land use and land cover change data from 2000 to 2020, as provided by Potapov et al. (2022). This global dataset was refined to match the extent of the study area, and the resulting changes in major land use and land cover types over the past two decades were examined for analysis.

The process of detecting land use and land cover changes involved three key steps. First, the input data was pre-processed. This was followed by the image processing phase, which includes image classification to distinguish different land use types. Finally, a post-

processing phase was used to focus on validating the accuracy of the classification results. A summary of the methods used to generate the land use and land cover data is provided below, with further details as illustrated in Potapov et al. (2022).

a) Landsat Data

The Landsat satellite image archive provided multidecadal land use and land cover monitoring on a global scale with a 30-meter spatial resolution. The study utilized spatially and temporally consistent Landsat GLAD Analysis Ready Data (ARD), accessible at https://glad.umd.edu/ard. The GLAD ARD includes 16-day global composites of Landsat normalized surface reflectance and brightness temperature, derived from the best-quality observations. It processed the complete Landsat Collection 1 Tier 1 data archive, covering land areas between 75°N and 56°S from 1997 to 2020 (Potapov et al., 2022).

b) Pre-processing

Remote sensing data often contains inconsistencies that require preprocessing to improve its accuracy and usability. To maximize the utility of GLAD ARD data, several preprocessing steps were carried out. These steps address issues such as atmospheric scattering, absorption, and cloud interference. The preprocessing included;

- Evaluating the quality of observations,
- Normalizing surface reflectance to reduce the effects of atmospheric interference, absorption, and surface anisotropy, and
- Compiling the best quality data into 16-day composites.

Each composite contained normalized surface reflectance for visible, near-infrared, and shortwave infrared Landsat bands, along with brightness temperature data. A data quality layer was also provided, which highlights atmospheric contamination such as clouds, haze, shadows, open water, and snow/ice coverage (Potapov et al., 2022).

c) Image Classification and Validation

The Image classification involved categorization of image pixels into specific thematic classes, to form the core of the land use and land cover mapping process. Since

classification errors are common, validation of the classification results was essential to ensure accuracy. This validation process typically represents the post-processing phase of land use and land cover analysis (Zhu & Woodcock, 2014).

The study identified various land cover types, excluding open water, using consistently processed Landsat ARD data generated by the Global Land Analysis and Discovery (GLAD) labs. Supervised classification techniques were employed to map these land cover categories. Specifically, decision tree models were calibrated using manually collected training data for mapping croplands and perennial snow/ice. A regression tree model, calibrated with forest structure data from the Global Ecosystem Dynamics Investigation Lidar (GEDI), was used to estimate forest height. Built-up areas were identified using a deep learning convolutional neural network (CNN) trained with Open Street Map (OSM) data.

These models were locally calibrated for forest height and cropland mapping by making data adjustments to align with the study area's scope for the reference years ranging from 2000 to 2020. while regional calibration was applied for other land cover products. For mapping surface water, Landsat data was classified per scene, and time-series analysis was performed using Google Earth Engine. Each global thematic product was validated independently through statistical sampling, with reference data derived from visual interpretation of high-resolution satellite imagery and Landsat time series (Potapov et al., 2022; Sumari et al., 2020).

d) Land Use and Land Cover Classes of Addis Ababa

To analyze the land use and land cover change in Addis Ababa, data from the sources mentioned above were refined to fit the extent of the study area for the reference years 2000, 2005, 2010, and 2020. The various land use and land cover types within the city were categorized into four primary classes: Built-up, Agriculture, Vegetation, and Wetland. The area covered by each class was calculated in hectares, and their spatial and temporal changes were assessed by comparing post-classification land use and land cover maps. These comparisons were carried out using ArcGIS 10 software.

Therefore, by integrating both primary and secondary data types, the study realized a comprehensive and robust dataset that not only facilitates rigorous quantitative analysis but also enriches the research with an in-depth qualitative insight. This mixed research approach allowed a more holistic understanding of the issues and helped the research to assess both the effects and the underlying reasons that drive the socio-economic dynamics of land expropriation in Addis Ababa City, Ethiopia. The combination of these data types and sources strengthened the study's conclusions and enhanced its relevance to policymakers, stakeholders, and scholars.

3.7 Methods of Data Analysis

This study employed a mixed-methods design and research approach, by integrating both quantitative and qualitative approaches and data analysis techniques for a comprehensive understanding of the research problem. Quantitative data from the household survey were analyzed using descriptive and inferential statistics. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were calculated using SPSS (version 24) to identify patterns in the socio-economic and demographic characteristics of the participants.

For inferential analysis, Structural Equation Modelling (SEM) was used to explore direct and indirect relationships between independent, dependent, and mediating variables. SEM analysis, conducted using SPSS 24 and IBM Amos 22, involved assessing reliability through Cronbach's Alpha (CA), Composite Reliability (CR) to address measurement errors, and Average Variance Extracted (AVE) for discriminant validity. Model fitness was evaluated using various indices, including Chi-Square (X^2), Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), and Standardized Root Mean Square Residual (SRMR).

The qualitative data, collected through key informant interviews and focus group discussions, were analyzed using thematic analysis. This method identified key themes, patterns, and narratives, providing contextual insights that complemented the quantitative findings. These insights were integrated through triangulation, offering a more in-depth understanding of the impacts of land expropriation on livelihoods. Additionally, spatial

analysis using Geographic Information Systems (GIS) was employed to examine spatiotemporal changes in land use and land cover. The spatial analysis provided a visual representation of land use shifts, supporting the statistical findings.

3.8 Methods of Data Presentation

The study's findings were presented through a combination of textual, tabular, graphical, and spatial formats to ensure a comprehensive and dynamic representation of the results. Quantitative data was summarized in statistical tables and figures, highlighting trends, patterns, and comparisons within the data. Spatial data analysis, obtained through GIS and remote sensing software, was visualized with maps that illustrated land use and land cover changes in the study area over time.

Whereas, qualitative data findings were presented as narratives, with key quotes and insights from participants used to reinforce and provide context to the quantitative data. This integrated approach, combining statistical tables, graphs, and spatial visualizations, ensured a clear and informative presentation of the research results.

3.9 Validation and Reliability

To ensure validity and reliability in the study, several measures were employed. The sampling techniques and sample size calculation were designed to minimize bias and ensure representativeness, enhancing the external validity of the study. The use of triangulation by combining quantitative and qualitative data from multiple sources strengthened the internal validity by cross-verifying the findings.

Reliability was addressed by employing standardized data collection instruments, such as pre-tested questionnaires and structured interview guides, to ensure consistency in the data collection process. Additionally, the data analysis procedures were rigorously followed and documented, enabling replicability of the results. The use of established methods for both qualitative and quantitative analysis further contributed to the study’s reliability.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

The study aimed to examine the effects of land expropriation on the livelihoods of farmers who lost their land by expropriation in Addis Ababa City. It explored the legal and policy frameworks governing land expropriation, the urbanization process, and the associated land use and land cover changes. The research also analyzed how land expropriation affected the livelihoods of displaced farmers and assessed the resettlement measures and livelihood support provided to sustainably restore their livelihoods. The study utilized survey data collected from 349 out of 361 sample farmer households accounting for about 97 percent across four sub-cities in Addis Ababa City.

4.2 RESULTS

4.2.1 Demographic and Socio-economic Background of Respondents

The demographic and socio-economic characteristics of the respondents were gathered, including key variables such as gender, age, marital status, family size, and educational attainment. In addition to these factors, the study also explored changes in farmers' income levels and employment status to assess the broader impact of land expropriation on their livelihoods.

Table 4.1 Demographic Background of Respondents

Attributes	Categories	Frequency	Percent
Gender	Female	115	33
	Male	234	67
	Total	349	100
Age	≤ 30	2	0.6
	31-40	53	15.2
	41-50	79	22.6
	51-60	68	19.5
	≥ 61	147	42.1
	Total	349	100
Family Size	= 1-2	44	12.6
	= 3-5	145	41.5
	= 6-8	116	33.2
	> 8	44	12.6
	Total	349	100
Marital Status	Single	14	4
	Married	284	81.4
	Divorced	20	5.7
	Widowed	31	8.9
	Total	349	100
Education	Not attended at all	127	36.4
	Read & write	33	9.5
	Primary 1-8	79	22.6
	Secondary 9-12	50	14.3
	Certificate & above	60	17.2
Marital Status	Single	14	4
	Married	284	81.4
	Divorced	20	5.7
	Widowed	31	8.9

(Source: own Survey, 2020)

The data on household demographics in table 4.1 revealed that the majority of the respondents are male-headed households, accounting for 67% of the sample, while female-headed households represent 33%. In terms of age distribution, the findings indicated that a significant portion (57.3%) of the respondents were between the ages of 30 and 60, signifying an economically active and productive segment of the population. Meanwhile, 42% of the respondents were above 60 years of age.

Regarding marital status, the overwhelming majority (over 80%) of the respondents were married, with single, divorced, and widowed individuals comprising less than 20%. The study also assessed the educational background of the respondents and revealed that a substantial portion (36.9%) have attained secondary education or below. A notable 36.4% of the respondents are illiterate, having received no formal education, while 9.5% are literate but have not pursued formal schooling. Only 17.1% of the respondents acquired education at the certificate level or higher. This low level of education among the expropriated farmers presents significant challenges, as it hinders their ability to secure employment in the city and generate sufficient income to restore their livelihoods and adapt to urban life after expropriation.

In terms of family size, 41.5% of the respondents had 3 to 5 members, while 33.2% had 6 to 8 members. Only 12.6% of respondents were either single or part of a two-person household or had families with more than 8 members. The findings further revealed that land expropriation significantly impacted the livelihood of the households, particularly in terms of income and employment.

The detailed analysis of employment patterns showed a major shift before and after expropriation. Before the loss of their land, the majority of respondents (53%) were solely engaged in agriculture, with an additional 46.4% involved in agriculture-related activities. Unemployment was virtually non-existent, with only 0.6% of respondents reporting that they were without work. However, in post-expropriation, unemployment increased to 33%, accompanied by a sharp decline in the number of farmers engaged exclusively in agriculture, which decreased to just 33%. This pointed to a significant restructuring of the labor force, as many former farmers shifted to temporary or non-agricultural jobs to sustain their livelihoods after the loss of their land.

The impact of land expropriation on their income levels was significant, with a notable shift across various income groups. Before the expropriation, the majority of farmers (56.2%) earned between 21,000 and 30,000 Ethiopian Birr (EBR) annually, while only a small fraction (0.6%) earned more than 40,000 EBR. After the expropriation, however, the income distribution shifted dramatically. There was a substantial rise in the number of farmers who earned less than 20,000 EBR annually, increasing from 5.4% to 28.1%,

indicating a considerable decline in income for a large portion of the population. On the other hand, the percentage of farmers earning above 40,000 EBR annually grew significantly, rising from 0.6% to 14%. This suggests that while many farmers faced income reductions, some individuals were able to take advantage of new employment opportunities post-expropriation and improve their financial standing.

4.2.2 Legal and Policy Frameworks Governing Land Expropriation

Ethiopia is currently undergoing rapid urbanization, characterized by significant population growth and economic development, which has led to an increased demand for urban development projects, particularly in Addis Ababa (Ambaye, 2013). As the capital city, Addis Ababa exemplifies this trend, with its swift urban expansion driven by the growing need for residential housing, infrastructure, and essential services (Terfa et al., 2019; Derbew and Dalacho, 2019). To meet this rising demand for land, the city administration has increasingly relied on land expropriation, particularly in surrounding agricultural areas where land is predominantly held by farmers. However, the use of eminent domain through land expropriation has had significant socio-economic consequences, especially for farmers whose livelihoods depend primarily on agriculture (Nguyen, 2016; Tuan, 2021; Fitawok et al., 2022). These individuals often face severe disruptions as their land use rights are taken away for urban development, frequently resulting in inadequate compensation and the absence of rehabilitative support (Kombe, 2010; Nguyen, 2016).

The increasing trend of land expropriation has led to a loss of public trust in the government, particularly among farming communities in and around Addis Ababa. This resistance stems from the perception that land expropriation, carried out under the guise of public interest, primarily benefits urban redevelopment projects, housing developments, industries, and infrastructure projects. Farmers often experience the acute effects of this practice, as their land use rights are expropriated at low compensation rates, only to be transferred to developers at much higher market prices (Ozlu et al, 2015; Wubneh, 2018). This practice undermines the security of land use rights for farmers and severely disrupts their socio-economic livelihoods. In response, many farmers prefer to transfer their land use rights informally at better prices than the compensation offered by

the government. This situation highlights significant gaps in the legal and institutional frameworks governing land expropriation, which appear to prioritize economic development over the rights and well-being of affected communities (Ambaye, 2013; Ayenachew and Abebe, 2024; Sewnetminale, 2017).

This review critically examines the legal basis of land expropriation and its practical implementation in Addis Ababa, revealing significant legal gaps that allow the government to exercise its eminent domain power with minimal constraints, particularly in expropriating land from farmers. The city's reliance on land expropriation for its expansion and infrastructure development is notable, with compensation and resettlement often accompanying these projects. However, misconceptions persist among the city's land officials and landholders regarding the human right to property, the international legal regulation of expropriation, due process requirements, and the determination of compensation and resettlement rates. These challenges show the need for an in-depth inquiry and a more equitable approach to land expropriation in Addis Ababa. The historical trends of land tenures, and major legal bases of land expropriation are discussed below.

a) Overview of the Ethiopian Land Tenure Systems

Ethiopia's land tenure system has undergone significant changes across three distinct historical periods, each influenced by varying ideologies and governance structures: the feudal era before 1974, the Derg regime from 1974 to 1991, and the era under the Federal Democratic Republic of Ethiopia (FDRE) beginning in 1991.

- ***Pre-1974 Feudal Era***

During the feudal period, land tenure was heavily skewed in favor of the ruling elite. In the northern regions, peasants were granted "rist" rights, which allowed them to use the land but not own it. Although these rights gave them some access to land, they were still obligated to pay tribute and provide services to the ruling class. In contrast, peasants in the southern regions experienced harsher conditions; they were largely displaced from their ancestral lands in the 19th century and became tenant farmers or "gabbars." These landless peasants were forced to serve northern settlers who had taken control of their lands, deepening social and economic inequalities.

- ***Derg Regime (1974-1991)***

  The 1974 overthrow of the imperial regime brought the Marxist military government known as the Derg to power. The Derg introduced a radical land reform policy under the slogan "Land to the Tiller," which aimed to redistribute land to the peasants who worked it. However, rather than granting ownership to the peasants, the Derg nationalized all urban and rural land, as well as additional houses in urban areas, without compensating the previous owners. The state became the sole landlord and rent collector, completely abolishing private land ownership.

  Under the Derg's new rural and urban land laws, the sale, mortgage, lease, donation, and inheritance of land were strictly prohibited, with limited exceptions for spouses and children. Initially, these reforms were well-received by rural communities, particularly in the southern regions. However, the government's repeated land redistribution policies and other problematic approaches eventually led to widespread disillusionment, as the promise of "Land to the Tiller" was never fully realized.

- ***FDRE Era (1991-Present)***

  The fall of the Derg in 1991 led to the establishment of a transitional government, which eventually adopted a new Constitution in 1995. The FDRE Constitution retained Derg's policy of public and state ownership of land, declaring all urban and rural land, along with natural resources, as the collective property of the Ethiopian people and the state.

  Under current rural land laws, peasants are granted lifetime holding rights to the land. These rights include the ability to use, lease, donate, and inherit land, though the sale, exchange, and mortgage of land remain prohibited. While the laws theoretically provide free access to rural land, in practice, land scarcity and distribution restrictions have limited this access (FDRE, 1995:4; RLAUP No. 456/2005). In urban areas, land is held exclusively through a leasehold system. According to the latest urban land leasehold proclamation, residents can acquire land only through auctions, with exceptions made only in rare circumstances. This new proclamation imposes stricter controls on access to urban land and restricts the free transfer of lease rights. In cases where unfinished properties are sold, the government retains the profits, making the land effectively valueless for mortgage purposes (FDRE Proclamation No. 721/2011).

b) The 1960 Civil Code of Ethiopia

The first fundamental base for land expropriation in Ethiopia is the Civil Code, which was enacted in 1960, and provided a comprehensive guide for land expropriation and compensation. Articles 1460-1488 of the Civil Code outline the procedures and principles that govern expropriation, by limiting its scope to serve a public utility rather than merely financial gain, as articulated in Article 1464 clearly. The Code requires that affected people should be informed and allowed to express their views, to ensure a degree of public participation in the expropriation process.

Article 1464 of the Civil Code of Ethiopia defines the concept of public interest in the context of expropriation. According to this article, expropriation proceedings cannot be used solely to obtain financial benefits. Instead, they must be employed to ensure that the public benefits from the increase in the value of land resulting from works carried out in the public interest. This provision underscores that the primary justification for expropriation must be the enhancement of public welfare, rather than the pursuit of economic gain.

Compensation is also mandated to be commensurate with the actual loss incurred, with Article 1474 specifically stating that "compensation should replace the equivalent quality and size of the expropriated properties". However, just like the constitution, the civil code also primarily recognizes compensation for improvements made on the land, rather than the land itself, leading to significant gaps in protecting the rights of the land use rightsholders. This limitation has been a point of argument, as it does not fully address the economic impact on landholders whose land is expropriated, particularly rural and peri-urban farmers who rely primarily on their land for livelihood.

c) The FDRE 1995 Constitution

Since its enactment in 1995, the Federal Democratic Republic of Ethiopia (FDRE) Constitution has served as the supreme law of the land in Ethiopia. It provides the legal foundation for land expropriation, compensation, and the resettlement of displaced persons. All policies and laws related to land expropriation, including federal government proclamations, regulations, and directives issued by regional governments and city administrations, are derived from the provisions of the 1995 FDRE Constitution and the

1960 Civil Code of Ethiopia. These legal instruments guide the processes and frameworks for managing land expropriation and ensuring the rights of affected individuals are upheld.

Based on the constitution, the federal government has enacted several proclamations, and regulations to guide land expropriation measures uniformly throughout the country such as expropriation, valuation, and compensation proclamations No. 455/2005 and its regulation 135/2007, which is revised and replaced by expropriation, valuation, and compensation proclamations No. 1161/2019 and its regulation no. 272/2020, urban land lease proclamations No. 721/2011, rural land administration proclamations No.456/2005, and Investment Proclamation No. 769/2012 are the major ones.

The constitution permits the regional states and city administrations to articulate their laws to govern land expropriation, valuation, compensation, and resettlement support for displaced persons in line with the FDRE constitutions, proclamations, and regulations. Accordingly, Addis Ababa city administration issued Directive No. 19/2014 which is revised and replaced by Directive No. 79/2022, aiming to guide the growing land expropriation for redevelopment and renewal projects in the inner city and urban expansions in the peripheral areas of the city from farmers for urban development projects like housing, industries, and infrastructures more effectively in its administration. However, this has caused inconsistency in implementation among the regions and city administrations. Despite these efforts, practical evidence indicates that there is a significant capacity gap among regions, cities, and towns, resulting in variations in the amount of compensation and support provided to resettle affected people.

The basis for land expropriation in Ethiopia is rooted in the 1995 Constitution of the Federal Democratic Republic of Ethiopia (FDRE). Article 40 (3) of the constitution establishes that “the ownership of both rural and urban land, along with all-natural resources, is exclusively vested in the State and the peoples of Ethiopia. This provision clearly articulates that, “land is a collective asset of the Nations, Nationalities, and Peoples of Ethiopia, and as such, it is not subject to sale or any other form of private exchange”. The Constitution, therefore, ensures that “land remains a public resource,

reflecting the principle of collective ownership and safeguarding it from individual commercialization or alienation".

The Constitution also offers specific protections for individuals and groups regarding land access. Article 40(4) guarantees Ethiopian peasants the right to obtain land without payment and ensures protection against eviction. Similarly, Article 40 (5) of the constitution safeguards the rights of Ethiopian pastoralists to free land for grazing and cultivation, safeguarding them from displacement. Although these individuals or groups do not possess private ownership rights over the land itself, they are granted full rights to the immovable property they build and the permanent improvements they make on the land. This includes the right to alienate, bequeath, or transfer these assets, and to claim compensation or remove their property upon the expiration of their land use rights, as stated in Article 40(7).

On the other hand, the constitution in Article 40(8) empowers the government to expropriate private property on two bases/restrictions;

1. If taking is for development programs that meet public interest or purposes, such as infrastructure, industry, dams, health centers, school developments, and
2. It should be preceded with an advanced compensation commensurate with the value of the property.

These restrictions are included to ensure that individuals are not unjustly deprived of their property without fair compensation and to maintain a balance between public development needs and individual property rights protection. However, the practice on the ground showed that the term public purpose is very crude. What constitutes public purpose is not briefly stated and listed in the Constitution and other laws. The term is not defined specifically and hence it becomes a means for misuse. The second limitation i.e. compensation was also not sufficient or equivalent to the value of properties lost or to cover the cost of all lost assets and restore the life of affected persons because it did not consider the true market or locational value of the land. It simply considered the replacement cost of improvements made by the owner.

The Constitution also did not specifically address the acquisition and transfer of urban land, leading to ambiguity. Article 40(6) grants investors the right to obtain land through payment arrangements, which has sometimes been interpreted to include urban residents. In response to this misconception, some regional constitutions have replaced the term "investor" with "proprietor," potentially extending land acquisition rights to urban dwellers. This is the case that is happening in expansion areas to cities and towns. Farmers in peri-urban areas are forced to lose their agricultural land at low and inadequate compensations and resettlement support to restore their livelihoods at least to their previous conditions. However, the local administrations transfer the land through lease transactions at higher prices. Because of this, farmers who understand their future fate sell their land use right ahead informally so as not to lose it at low compensation. Participants of the focus group discussions raised this practice in the study areas in the Bole and Nifas-Silk Lafto sub-cities.

Following this, a critical issue arose from the apparent contradiction between Article 40(3), which affirms joint ownership of land by the state and the people, and Article 40(8), which provides for compensation only for private property and improvements made on the land, but not for the land itself. This discrepancy created a contradiction within the constitutional framework, where the right to land ownership is recognized, yet the economic benefits typically associated with such ownership are limited. This tension complicates the processes of asset valuation and compensation, often leaving affected landholders struggling with the challenge of reconciling their land rights with the limited compensation provisions. As a result, the legal framework must carefully balance the need to facilitate national development with the imperative to protect the property rights and economic interests of individual landholders, ensuring that they are fairly compensated in any expropriation process. Moreover, the term “public purpose” is not clearly stated. Thus, it should be exclusively defined at least by listing the major developments that meet the interest of the public at large. As empirical studies showed countries like China, Brazil, and European countries have specific lists in the definition of public purpose in their legal frameworks.

Article 44(2) of the Ethiopian Constitution mandates that the government is responsible for ensuring that individuals displaced by public development projects are resettled in conditions that are at least equal to, if not better than, their previous living standards. This provision underscores the government's obligation to support displaced people, not just by providing compensation but by actively facilitating their resettlement in a manner that maintains or improves their quality of life. This article intends to prevent displacement from leading to a decline in the economic and social well-being of affected individuals and communities. It reflects a commitment to safeguarding the rights of displaced people by ensuring that their resettlement includes adequate housing, access to services, and opportunities for economic stability, thereby enabling them to rebuild their lives effectively after displacement.

However, there are significant limitations on the government's ability to fulfill its responsibilities in this regard. Information gathered through interviews, focus group discussions, and field visits indicated that affected individuals often express grievances about the adequacy of the support they receive. Many displaced people felt that the resettlement assistance provided fell short of their expectations, leaving them struggling to maintain or restore their previous standard of living. This gap between the constitutional mandate and the actual support provided highlights challenges in the implementation of resettlement programs, indicating a need for more effective measures to ensure that displaced individuals are adequately supported in their transition.

This constitutional provision is further reinforced by the other laws, including; the Expropriation of Landholdings for Public Purpose Proclamation No. 455/2005 and Proclamation No. 1161/2019, the Payment of Compensation for Property Situated on Landholdings Expropriated for Public Purposes Regulations No. 135/2007, The Civil Code of Ethiopia (1960), particularly Articles 1460-1488, The Urban Lands Lease Holding Proclamation (2011), particularly Articles 26-31, the federal government rural land administration and use proclamation No. 456/2005, the Ethiopian Investment Proclamation (2012, particularly Article 25, as well as various regional rural land use and administration laws.

d) FDRE Urban Land Lease Proclamation No.721/2011

The proclamation was enacted in 2011 to govern the leasehold system for urban lands in Ethiopia, establishing the legal framework for leasing urban land and outlining the rights and obligations of lessees. The legislation also addresses expropriation, where the government can acquire leased land for public purposes, such as infrastructure projects or private investments, with fair compensation provided to the affected parties.

The Proclamation specified that compensation must be paid in advance and should cover the replacement cost of buildings and the market value of other fixtures, including trees and fruits. Additionally, individuals displaced by expropriation are entitled to a substitute plot within the urban area, ensuring continuity for those affected.

The expropriation process begins with a clearance notice issued to the landholder at least 90 days before the land is taken over, detailing the compensation amount and the specifics of the substitute plot. If the landholder disputes the terms, they can submit a grievance within 15 days, which will be reviewed by an appropriate body. Disputes that are not resolved can be taken to an appellate tribunal, which handles cases related to urban land clearing and compensation. While the tribunal's decisions are final in most cases, compensation-related disputes can be appealed to regular courts, though this aspect has been a point of contention. Overall, the lease proclamation played a critical role in Ethiopia's urban land tenure system but faces challenges, such as limited access to affordable housing and ambiguities in leasehold regulations (FDRE, 721/2011).

e) Proclamation 455/2005 and 1161/2019

The Federal Government Expropriation of Landholdings for Public Purposes and Payment of Compensation Proclamation No. 455/2005 was a pivotal legal instrument in Ethiopia, establishing the basic framework for land expropriation across the country. It was primarily designed to facilitate the expropriation of private landholdings for public purpose developments that were deemed to meet the public interest, whether these projects were implemented by public agencies or private entities, like developers and associations. This proclamation empowered woreda (district) and city administrations (Addis Ababa and Dire-Dawa) to implement land expropriations, provided that compensation was paid in advance and for public purpose developments. Specifically, it

granted these local authorities the right to expropriate private landholdings for public purposes if they believed that the land would be better utilized by a development project authorized by an appropriate higher regional or federal government organ (Proclamation No.455/2005(1). This proclamation remained enforced for a significant period until it was eventually revised and replaced by the new Proclamation No.1161/2019 in 2019.

The new Proclamation No.1161/2019, which substituted Proclamation No. 455/2005, introduced several key amendments aimed at addressing the shortcomings of the previous law and providing a more robust legal framework for land expropriation, valuation, compensation, and resettlement across Ethiopia. According to Article 3 of the new proclamation, its provisions applied uniformly throughout the country, both in rural and urban areas in matters related to land expropriation, payment of compensation, and the resettlement of displaced peoples. It also empowers regional states, as well as the two city administrations, to issue directives necessary for the proper implementation of this proclamation and the associated regulation No. 472/2020, which was issued by the Council of Ministers (Proclamation No. 1161/2019 Article 26 Sub-Article 2).

One of the most significant changes introduced in Proclamation No.1161/2019 is related to the method of calculating compensation for properties situated on expropriated land. Under the previous Proclamation No.455/2005, compensation for expropriated property was determined based on the replacement cost of the property as it existed at the time of expropriation. This meant that if the property had been in use for ten years before being expropriated, the compensation would be calculated based on the value of the property in its current, potentially depreciated state, rather than on the cost of constructing a new, equivalent property. This approach often led to disputes and dissatisfaction among property owners, as the compensation did not fully reflect the cost of replacing their expropriated assets with new ones.

Recognizing the limitations and ambiguities inherent in the previous proclamation No.455/2005, the new proclamation has made a critical adjustment. The new proclamation stipulated that the amount of compensation for property on expropriated land should be sufficient to cover the cost of replacing the property/assets with a new equivalent (Proclamation No. 1161/2019 Art 12 sub-article 2). This provision indicated a

significant improvement compared to the previous approach, as it ensures that property owners receive compensation that fully reflects the cost of replacing their expropriated property, thereby reducing the potential for disputes and addressing the shortcomings of the previous one.

Overall, Proclamation No. 455/2005 laid the base for land expropriation in Ethiopia, it had several deficiencies, particularly in the area of compensation calculation. The introduction of Proclamation No. 1161/2019 addressed many of these issues by providing a clearer and more equitable framework for compensation and ensuring that displaced landholders are better compensated for their losses. The new proclamation also granted regional and city administrations more autonomy in implementing these laws, further decentralizing the expropriation process and tailoring it to local contexts. These changes are expected to enhance the fairness and transparency of the expropriation process, ultimately benefiting both the government and affected property owners.

The recent Proclamation No. 1161/2019 introduced significant changes to the legal framework governing displacement compensation for rural landholders who are permanently displaced from their land due to expropriation. In comparison to its predecessor, Proclamation No. 455/2005, the new proclamation reflected an evolved understanding of the challenges faced by displaced communities and intended to provide more substantial compensation and support.

Under Proclamation No. 455/2005, a rural landholder whose land was permanently expropriated was entitled to displacement compensation equivalent to ten times the average annual income they produced during the five years before the expropriation (Proclamation No. 455/2005 Article 8). However, this formula has been revised in Proclamation No.1161/2019. The new proclamation specified that if equivalent substitute land is not available, the displaced landholder shall be compensated with an amount equivalent to fifteen times the highest annual income they generated during the last three years preceding the expropriation (Article 13:1(b & c) of the new proclamation No. 1161/2019). This adjustment extends the period considered for calculating compensation from ten years under the previous law to fifteen years, which reflects an attempt to provide more substantial compensation to displaced farmers.

Despite this increase in the calculation period, this study argues that "the formula used for determining displacement compensation in both the old and new proclamations lack a solid legal justification". The constitution granted peasant farmers, semi-pastoralists, and pastoralists the right to use rural land for an unlimited period (FDRE, 1995 Art 40 (4-5). Additionally, these laws permitted the transfer of land use rights to family members, thereby ensuring the continuity of landholding across generations (Article 40(7) of the constitution. Given these permits, the study contended that the method of calculating displacement compensation whether by multiplying the average annual income of the past five years by ten (as per the old proclamation) or by multiplying the highest annual income of the previous three years by fifteen (as stated in the new proclamation) was not logically reasonable. The compensation formulas appeared arbitrary and did not adequately reflect the permanent nature of the loss that displaced landholders face. The study revealed that there is no solid legal foundation to support the compensation calculation methods for displacement as outlined in both proclamations.

Another important ambiguity in the new proclamation, which was absent in the previous one, is the inclusion of displacement compensation for communal landholdings. The proclamation mandates that the two city administrations and the regional states must issue directives to determine appropriate compensation for communal landholders (FDRE, 2019(13). Specifically, the proclamation in Article 13 sub-article 3(a) stated that "the valuation of displacement compensation for communal land is to be based on either the use of the communal land or the lost benefits and livelihoods of the displaced communities". This provision recognizes the unique nature of communal landholdings and attempts to address the collective loss experienced by communities when such land is expropriated.

Furthermore, the new Proclamation No. 1161/2019 introduces a notable provision that requires regional states, and the two city administrations to establish a compensation payment and rehabilitation fund (Proclamation No.1161/2019 Article 16(1). This fund is intended to ensure that displaced individuals receive the necessary support to restore their lives sustainably. Moreover, the proclamation also obliges these administrations to develop comprehensive resettlement packages designed to enable displaced people to sustainably resettle (Proclamation No.1161/2019:16(2). The responsibility for resettling

displaced people based on these packages and allocated budgets falls to urban or woreda administrations Proclamation No. 1161/2019: 16(3).

One of the most innovative and potentially transformative provisions of the new proclamation is the possibility for displaced people to own shares in the investment projects for which their land was expropriated (Proclamation No. 1161/2019:16(4). This provision offers a way for displaced people to share in the economic benefits of development projects, potentially providing them with a source of ongoing income. For those displaced individuals who do not own shares in the investment and have lost their income as a result of the expropriation, the proclamation promises that they will be beneficiaries of the resettlement package Proclamation No. 1161/2019:16(5). This aspect of the proclamation is particularly hopeful, as it indicates a commitment to not only compensating displaced people but also to supporting their long-term livelihood restoration.

However, the effectiveness of these provisions is contingent upon the successful enactment and implementation of detailed regulations that outline the contents and procedures of the resettlement packages. Recognizing the need for a coherent and standardized approach across the country, the Federal Government's Council of Ministers enacted Regulation No. 472/2020. This regulation was designed to implement Proclamation No. 1161/2019 uniformly and ensure that the objectives of the proclamation are achieved consistently across all regions and cities. The regulation empowered regional states and city administrations to issue directives in alignment with the proclamation, which are to be enforced rigorously to guarantee that the intended benefits reach the displaced populations.

If these measures are implemented effectively, they have the potential to significantly enhance the resettlement and rehabilitation process, providing displaced communities with the necessary support to restore their lives and livelihoods sustainably. To this end, the Addis Ababa City Administration has taken proactive steps by issuing Directive No.79/2021, which replaces the earlier Directive No.19/2014. This new directive has already been put into practice in recent expropriation cases, including those related to road expansion projects, corridor development, and inner-city redevelopment initiatives.

The successful implementation of Directive No. 79/2021 in these cases demonstrates a commitment to improving the resettlement process and ensuring that displaced residents receive the support and compensation they are entitled to under the law.

These advancements in legal and regulatory frameworks, when effectively applied, hold the promise of not only addressing the immediate needs of displaced communities but also laying the foundation for more equitable and sustainable urban development in Ethiopia. The ongoing application of these directives, particularly in complex and large-scale urban projects, will be a critical test of their effectiveness in achieving these goals.

Recently, a couple of months ago, the Ethiopian Parliament approved further revisions to these laws, reflecting the government's response to ongoing societal demands for fairer compensation and more robust support mechanisms for those affected by expropriation.

4.2.3 Dynamics of Urbanization, LULC Changes, and Land Expropriation

a) Overview of Addis Ababa's Urban Growth

Addis Ababa, the capital city of Ethiopia, has experienced rapid urban growth over the past few decades, driven by a combination of population increase, economic development, and migration from the surrounding and other rural areas. The city's population has increased from about over half a million in the early 1960’s to more than 5 million by 2024, reflecting both natural growth and a substantial incoming of people looking for better opportunities. This growth has transformed Addis Ababa from a relatively small, unplanned urban center into an extensive metropolis characterized by significant urban expansion into the surrounding rural agricultural areas (World Population Review, 2024).

The urbanization process in Addis Ababa has been accompanied by the conversion of agricultural and forest lands into residential, commercial, and industrial zones mainly through expropriation. The city's expansion is most notable in its eastern, southern, southeastern, and southwestern peripheries, where previously rural areas have been incorporated into the urban fabric (Abdissa, 2005). This expansion has resulted in substantial changes in land use and land cover (LULC), with natural landscapes giving way to built-up areas. The need to accommodate the growing population and develop

infrastructure, housing, industry parks has necessitated extensive land expropriation often leading to the displacement of farmers in the surrounding of the city (Mulugeta et al., 2017).

b) The Changing Scenario of Addis Ababa's Land Use Land Cover

The study explored the changes in land use and land cover patterns of Addis Ababa over a two-decade period, starting from 2000 to 2020. The analysis focused on four key LULC categories that are integral to the city's landscape: Built-up area, Agricultural land, Vegetation cover, and Wetland. These categories represent the dominant land uses that have been shaped by urbanization and other socio-environmental factors over time.

To analyze the spatial and temporal changes in LULC, satellite imagery of Addis Ababa was analyzed at five distinct intervals: 2000, 2005, 2010, 2015, and 2020. This multi-temporal analysis clearly showed the evolving spatial distribution of each land use land cover class, as well as the varying rates of change across the study period. Through comparison, the study revealed how the city's rapid urbanization has led to significant shifts in land use, with built-up areas expanding, while agricultural land and vegetation cover decreasing, and wetlands increasingly being affected. Figure 4.1 visually illustrates these changes, providing a clear representation of the transformations in the city's landscape with in the two decades from 2000 to 2020.

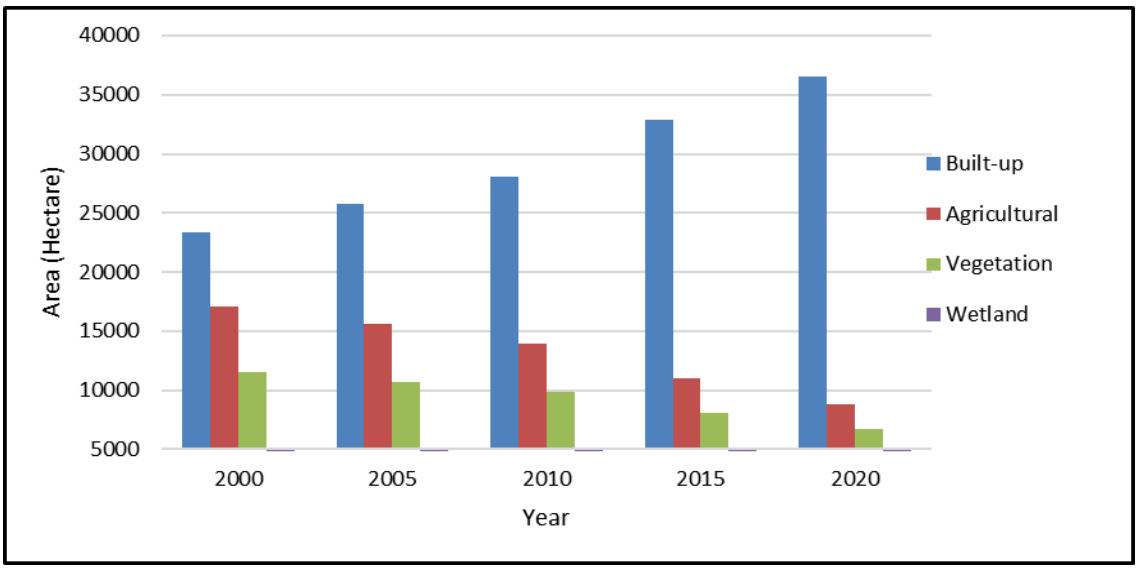

Figure 4.1 The LULC Classes of Addis Ababa from 2000 to 2020

In 2000, the analysis of land use and land cover changes in Addis Ababa revealed that the built-up area was the predominant category, encompassing a total of 23,370.8 hectares. This accounted for 44.92% of the city's total land area, highlighting the significant extent of urban development at the time. Agricultural land was the second-largest LULC class, covering 17,075.5 hectares, which represented 32.82% of the city's total area. This indicates that despite the growth of urban infrastructure, a considerable portion of the city's landscape was still devoted to agricultural activities.

While the vegetation cover ranked third, comprising 11,558.1 hectares, or 22.22% of Addis Ababa's land area. Although smaller in comparison to built-up and agricultural lands, vegetation still played an important role in the city's ecological makeup. In contrast, wetlands accounted for a minimal portion of the city's land cover, with only 24.48 hectares, representing very small portion (0.004%) of the total area. This suggests that wetlands were an extremely limited resource within the urban landscape, possibly due to the city's expansion and the encroachment of other land use categories.

Throughout the study period, Addis Ababa underwent a profound transformation in its land use and land cover (LULC) patterns, driven by rapid urbanization and population growth. The built-up area expanded significantly, reflecting the city's increasing demand for residential, commercial, and industrial spaces. As Addis Ababa developed, the urban landscape shifted to accommodate new housing, businesses, and infrastructure projects, leading to a steady rise in the proportion of land classified as built-up.

However, agricultural land and vegetation cover saw a notable decline. Farmland, once integral to the city's expansion areas, was gradually absorbed into the expanding urban area. Similarly, green spaces and vegetation cover were reduced as more of the natural environment was replaced by buildings and infrastructure. This shift underscores the pressures of urban growth on the surrounding peri-urban areas, which were rapidly converted to meet the needs of a growing city.

The minimal land area occupied by wetlands showed little change over the two-decade period. The scarcity of these environments i.e. wetland within the city's boundaries limited their transformation, and while their presence remained relatively stable, they continued to constitute only a small fraction of Addis Ababa's total land area. This reflects the limited role of wetlands in the city's overall land use composition, even as other LULC categories experienced significant shifts.

This analysis of Addis Ababa's land use and land cover changes illustrated critical insights into the challenges urbanization poses, especially regarding the reduction of agricultural and vegetative lands. These areas are vital not only for food security but also for environmental sustainability and the city's ability to adapt to climate change. The spatial and temporal analysis of LULC classes, as depicted in Figure 4.1, highlighted the ongoing land transformation processes reshaping Addis Ababa's landscape. The expansion of built-up areas and the concurrent decline in farmland and green spaces demonstrate the pressures of urban growth on natural resources and the surrounding peri-urban areas.

Therefore, understanding the dynamics is essential for effective urban planning and land management strategies that seek to balance the city's development needs with the preservation of critical natural assets. Sustainable growth initiatives must prioritize the integration of green spaces and protect agricultural lands to ensure environmental resilience and long-term viability. The changes across the LULC classes, as summarized in Table 4.2, provide a detailed breakdown of land cover types and their areas over time. This data offers a clear illustration of how urban expansion is exerting pressure on the city's landscape, helping to inform policy makers and planners on the necessary steps to manage land resources more sustainably.

Addis Ababa's land use and land cover had undergone a profound change compared to the situation two decades earlier. The built-up area, already the dominant land use in 2000, saw a dramatic increase of 13,150.30 hectares (25.27%) over the 20-year period. This expansion brought the total built-up area to 36,521.10 hectares, accounting for 70.19% of the city's total land area. This substantial growth underscores the rapid urbanization that

has characterized Addis Ababa, driven by a combination of factors, including the city's expanding population.

The population growth in Addis Ababa, driven by both natural population growth and significant in-migration from other regions of Ethiopia, has intensified the demand for urban land. This demand has led to an increased residential, commercial, and industrial developments, contributing to the rapid conversion of agricultural and vegetative areas into built-up spaces. The city's transformation over this period reflected the challenges of managing urban expansion while balancing the needs of development with the preservation of critical land resources.

The expansion of built-up areas, agricultural land in Addis Ababa has shown a significant decline. Between 2000 and 2020, agricultural land decreased by 8,282.08 hectares (15.92%), shrinking from 17,075 hectares (32.82%) to just 8,793.42 hectares (16.90%) of the city’s total land area. This sharp reduction highlights the profound impact of urban sprawl as it encroached into once-rural areas, threatening local food production and altering the traditional agricultural livelihoods that had long sustained communities on the city's outskirts. The loss of farmland due to urban expansion raises concerns about food security and the resilience of the peri-urban agricultural economy.

Similarly, the city’s vegetation cover showed a notable reduction over the two decades, decreasing by 4,866.21 hectares (9.35%). In 2000, vegetation accounted for 11,558.1 hectares (22.22%) of the city’s land, but by 2020, it had diminished to 6,691.89 hectares (12.86%). This decline in vegetation highlights the environmental costs of unchecked urbanization, as green spaces are replaced by infrastructure. The shrinking of natural areas not only reduces biodiversity but also weakens Addis Ababa's green belt and its natural systems for cooling the urban environment.

The reduction in vegetation has had tangible environmental impacts, contributing to air quality deterioration, increasing urban heat, and degrading the city’s ecological balance. These changes challenge the city’s livability and make it more vulnerable to the effects of climate change, as the loss of green spaces undermines its capacity for temperature regulation and sustainable growth

Wetlands, which comprised a tiny portion of Addis Ababa's total land area in 2000, also experienced a slight decline over the study period. Wetland areas decreased from 24.48 hectares to 22.42 hectares by 2020. While the reduction in wetlands was small compared to the more dramatic changes in other LULC classes, this gradual loss raises important concerns about its long-term effects on the city's water regulation systems, habitat preservation, and overall ecosystem services. Wetlands play a critical role in flood control, water filtration, and providing habitats for various species, making their preservation essential despite their small footprint.

The analysis of the five reference years; 2000, 2005, 2010, 2015, and 2020 clearly demonstrates the significant dynamics of land use and land cover change in Addis Ababa. Over the past two decades, the city has witnessed a substantial expansion of built-up areas, driven by rapid urbanization, at the expense of agricultural lands and vegetation cover. This shift has resulted in a fundamental transformation of Addis Ababa's landscape, reshaping its environmental health and sustainability.

The comparison of LULC changes, as summarized in Table 4.2, offers an in-depth perspective on the scale and nature of these transformations. It serves as a critical resource for urban planners, policymakers, and stakeholders, providing the data needed to develop strategies that balance the city's growth with sustainable land use practices. The findings underscore the importance of implementing land management policies that mitigate the negative environmental impacts of urban expansion while preserving essential natural resources such as agricultural land, vegetation, and wetlands.

Table 4.2 Temporal changes of Addis Ababa's LULC from 2000-2020

LULC Classes	2000		2005		2010		2015		2020	
	ha	%	ha	%	ha	%	ha	%	ha	%
Built-up	23370.8	44.92	25749.3	49.49	28108.3	54.02	32874.5	63.19	36521.1	70.19
Agricultural	17075.5	32.82	15604	29.99	13987	26.88	11025	21.19	8793.42	16.9
Vegetation	11558.1	22.21	10651.8	20.47	9910.29	19.05	8108.44	15.58	6691.89	12.86
Wetland	24.4793	0.05	23.8195	0.05	23.2665	0.04	20.9631	0.04	22.4235	0.04
Total	52028.9	100	52028.9	100	52028.86	100	52028.9	100	52028.8	100

(Source: Extracted from the GIS analysis, 2024)

The analysis of Land Use and Land Cover (LULC) changes from 2000 to 2020 reveals a clear and ongoing transformation of Addis Ababa's landscape. The data presented in Table 4.2 shows a consistent and marked increase in built-up areas across the two study periods, 2000 to 2010 and 2010 to 2020. Meanwhile, agricultural land, vegetation cover, and wetlands have steadily decreased over the same timeframe. This trend underscores a significant expansion of urban spaces, as built-up land continually encroached upon formerly agricultural and vegetative areas.

The rapid and persistent rise in built-up areas is a direct reflection of the city's accelerated urban growth, which has been driven by the need for more residential, commercial, and industrial spaces. Much of this expansion can be attributed to city administration efforts to acquire land for public development projects, often through expropriation at relatively low compensation rates. Such land acquisitions typically come at the expense of agricultural and green spaces, leading to substantial land cover changes in and around Addis Ababa.

This expansion has not been without consequences. The conversion of agricultural land and natural vegetation into urban areas has led to conflicts with displaced farmers, who bear the brunt of these land expropriation practices. Survey results confirm the significant losses faced by these communities, which include not only the forfeiture of land but also the loss of income, employment opportunities, and agricultural production. The negative

effects of urban sprawl on local farmers highlight the need for more equitable land management policies and fairer compensation strategies to mitigate the social and economic disruptions caused by urban expansion.

The findings emphasize the urgency of developing land management approaches that balance the demands of urban growth with the protection of vital agricultural and vegetative areas. By adopting more sustainable and fair practices, the city can reduce conflicts with local communities and foster a more inclusive and resilient development process.

Table 4.3 The Rate of LULC Change from 2000 to 2020

LULCT	2000-2010		2010-2020		2000-2020		Yearly Change	
	ha	%	ha	%	ha	%	ha	%
Built-up	4737.5	9.1	8412.8	16.2	13150	25.28	657.515	1.26
Agricultural	-3089	-5.94	-5193.6	-10	-8282	-15.92	-414.104	-0.80
Vegetation	-1648	-3.16	-3218.4	-6.2	-4866	-9.35	-243.311	-0.47

(Source: Extracted from the GIS analysis, 2021)

As illustrated in Table 4.3, the Land Use and Land Cover (LULC) changes in Addis Ababa between 2000 and 2020 reveal a substantial transformation of the city's landscape. The data showcases a remarkable growth in built-up areas, with an overall increase of 13,150 hectares over the two decades, translating to a 25.28% rise. This vigorous urban expansion reflects the city's rapid growth and development momentum, with an average annual increase of approximately 657.515 hectares, or a growth rate of 1.26% per year.

The built-up area, which includes infrastructure, commercial activities, and residential zones, expanded significantly, growing from 44.92% of the city's total land area in 2000 to 70.19% by 2020. This rapid growth is indicative of Addis Ababa's ongoing urbanization and the pressures that come with accommodating an increasing population, economic activities, and infrastructure development. The substantial rise in built-up areas, as captured through Landsat's spatial resolution, reflects the city's evolving landscape and

the challenges that accompany such rapid change, particularly in terms of managing land resources and mitigating the impact on agricultural and natural spaces.

Conversely, agricultural land in Addis Ababa has experienced a significant contraction, with a cumulative decrease of 8,282 hectares, or 15.92%, between 2000 and 2020. This decline reflects the persistent conversion of farmland and vegetative areas into built-up zones, driven largely by urban expansion and land expropriation by the city administration. Over the same period, vegetation covers also decreased by 4,866.21 hectares (9.35%), further emphasizing the environmental cost of the city's rapid urban growth.

The ongoing reduction of agricultural land and vegetation cover is a direct result of increasing pressure to accommodate Addis Ababa's growing population and infrastructure needs. These changes not only threaten local food production and ecological stability but also highlight the critical need for regulatory measures to manage urban sprawl. The adoption of effective land-use policies is essential to protect agricultural and natural spaces from unchecked conversion, ensuring that urban development proceeds in a sustainable and balanced manner that preserves vital resources for future generations.

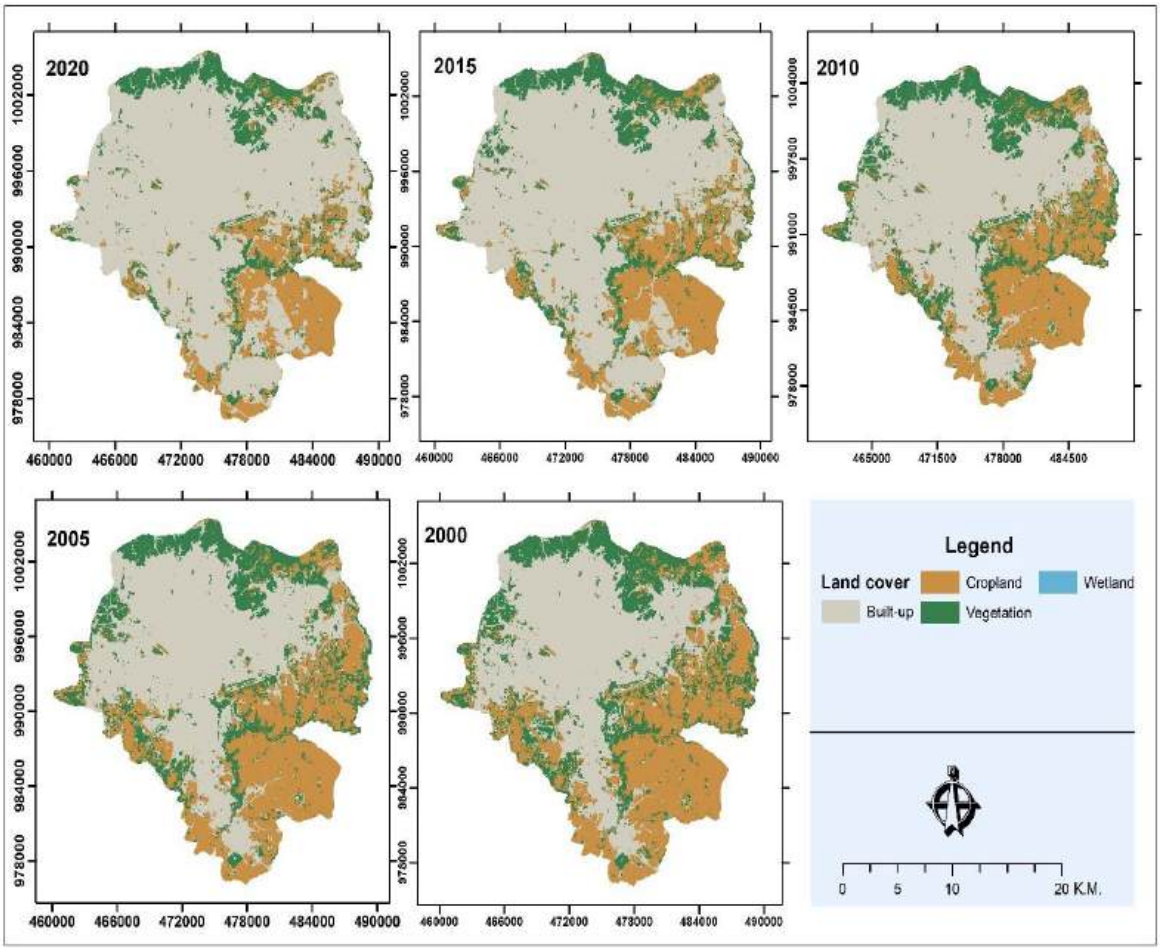

Figure 4.2 Trends of LULC Change in Addis Ababa from 2000 to 2020 (From GIS Analysis, 2021)

As illustrated in Figure 4.2, the distribution of agricultural and farm land in Addis Ababa at the beginning of 2000 was predominantly concentrated in the eastern, southern, and southwestern regions of the city. Over the following years, these areas have undergone substantial changes, with a marked decline in agricultural land and a corresponding expansion of built-up areas.

The transformation is clearly visible from 2005 through 2020, as depicted in Figure 4.2. The figures show a dramatic shift in land use, with agricultural and vegetative areas gradually giving way to urban development. This change highlights the significant impact of urban growth on once-agricultural zones, reflecting the city's ongoing expansion and the conversion of land for residential, commercial, and industrial purposes. The visual

evidence of this shift underscores the need for strategic urban planning to manage growth while preserving essential agricultural and natural landscapes.

c) Urbanization and Land Expropriation in Addis Ababa

The findings revealed that Addis Ababa has undergone rapid urbanization over the past two decades, a trend substantiated by the studies of Terfa et al. (2019) and Ozlu et al. (2015). The city's population has increased dramatically due to both natural population growth and rural-to-urban migration, with the Central Statistical Agency of Ethiopia (CSA) estimating the population at over 5 million (CSA, 2013). This population growth has caused substantial urban expansion and significant changes in land use land cover particularly in built-up areas, which is reinforced by the findings of Arsiso et al. (2018) and Mulugeta et al. (2017).

The built-up area in Addis Ababa expanded significantly, with an increase of 13,150 hectares, reflecting a remarkable 25.28% growth. This rapid expansion represents an annual increase of 657.515 hectares, or approximately 1.26%, indicating a vigorous pace of urban development. The predominant pattern of this growth has been peripheral expansion, extending the city's boundaries and incorporating previously agricultural and other land uses.

This expansion and land use change was facilitated by extensive land expropriation, leading to significant losses in agricultural land, income, and production, as well as reductions in vegetation cover and wetlands. The extensive conversion of land for residential, commercial, and infrastructural projects has had profound impacts on displaced farmers, often resulting in inadequate compensation and relocation support. This disruption to farmers' lives and livelihoods aligns with previous research by Bula (2020), Haregeweyn et al. (2012), and Teklemariam and Cochrane (2021), which highlights the adverse effects of urban expansion on agricultural communities.

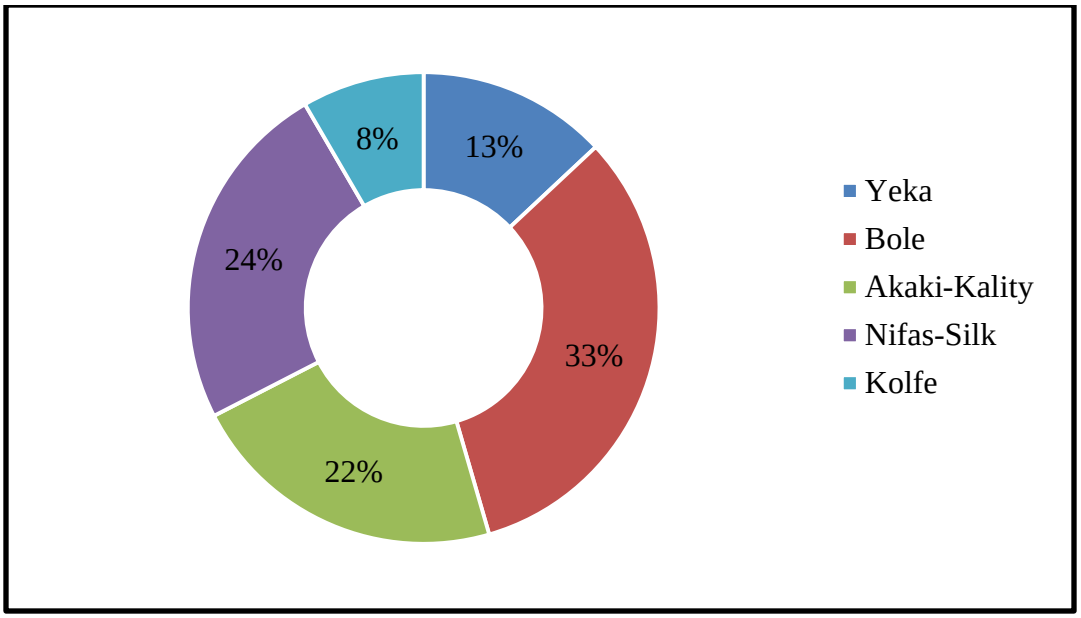

Figure 4.3 Number of Displaced Farmers by Expropriation (AACA, 2020)

Figure 4.3 provides a detailed account of the displacement of farmers across five sub-cities within Addis Ababa. Bole sub-city has experienced the highest number of displacements, totaling 2,089 farmers, followed by Nifas-Silk Lafto with 1,554 displaced farmers, Akaki-Kality with 1,410, Yeka with 838, and Kolfe-Keranyo with the lowest count of 540 displaced farmers. In total, over 6,431 farmer households have been affected by expropriation across the city. The variations in the number of displaced farmers among the sub-cities are influenced by each area's suitability for different types of urban development projects, including infrastructure, residential zones, and industrial developments.

As shown in Table 4.4, land expropriation in Addis Ababa is driven by various development priorities, reflecting the city's strategic focus on urban growth and modernization. The most significant portion of land expropriation, 62.46%, is allocated to condominium housing development, underscoring the city's pressing need to accommodate its rapidly growing population. This highlights the Addis Ababa City Administration's priority in addressing housing shortages and providing affordable living spaces for its residents.

Investment-related projects account for 21.49% of the expropriated land, emphasizing the city's proactive efforts to attract investors and stimulate economic growth. This allocation demonstrates the city's commitment to enhancing its economic landscape through private and public investments, with the aim of creating jobs and boosting local economic activities.

A further 8.88% of the expropriated land is designated for industrial and ICT park development, particularly in areas such as the Bole Lemi and Kilinto industrial parks. This indicates a strategic focus on fostering industrialization and supporting economic diversification. By prioritizing such projects, the city administration aims to strengthen Addis Ababa's role as an economic hub, providing opportunities for manufacturing and technological advancements.

Lastly, infrastructure development projects account for 7.16% of the total land expropriation, highlighting the city's effort to improve urban infrastructure. This includes the construction of roads, utilities, and other essential services that are vital for supporting the growing population and facilitating overall urban development. Although it constitutes a smaller percentage compared to other categories, this allocation underscores the importance of enhancing the city's infrastructure to accommodate its expanding urban environment.

Table 4.4 The purposes of the land expropriation from farmers

No	Reason/purposes of expropriation	Frequency	Percentage
1.	Condominium housing development	218	62.46
2.	Investment	75	21.49
4.	Industry % ICT Park	31	8.88
5.	Infrastructure	25	7.16
	Total	**349**	**100.00**

(Source: Own Survey, 2020)

4.2.4 Effects of Land Expropriation on Farmer's Livelihoods

Land expropriation in urban peripheral areas for public purpose developments has significant impacts on farmers, leading to profound social and economic losses. The dislocation caused by land expropriation results in an immediate loss of income for farmers who rely heavily on their agricultural activities. The resulting insecurity of land tenure disrupts their long-established livelihoods and hinders long-term investments in sustainable assets.

Forced relocation often leads to inadequate living conditions, exacerbating the loss of housing and shelter. Socially, the fragmentation of communities in urban peripheral areas destroys essential social support networks. The psychological stress and uncertainty associated with land expropriation can severely impact health and overall stability. Moreover, inadequate compensation and insufficient resettlement support compound the economic difficulties faced by expropriated farmers, leaving them in a precarious situation. The socio-economic effects of urbanization-driven land expropriation in expansion areas of Addis Ababa on farmers include;

a) Loss of Income

The finding indicated that (table 4.5), a significant portion (45.5%) of the expropriated farmers' income has decreased after the expropriation. As a result, land expropriation has adverse economic consequences for a considerable number of farmers.

Table 4.5 Change in Income of Respondents after expropriation

Annual Income	Before Expropriation		After Expropriation		Change (%)
(ETB)	N	%	N	%	
< 20,000	19	5.4	98	28.1	+22.7
21,000-30,000	196	56.2	93	26.6	-29.6
31,000-40,000	132	37.8	109	32.9	-4.9
>40,000	2	0.6	49	14	+13.4

(Source: Own Survey, 2020)

Before expropriation, the annual income for the majority (56.2%) of the respondents ranges between 21,000 and 30,000 EBR. While 37.8% earn, an annual income ranging from 31,000-40,000 EBR. It was only 5.4% of the respondents that earn less than 20,000 EBR. Respondents with an annual income of more than 40,000 EBR before the expropriation was only 0.6%.

b) Loss of employment

Table 4.6 Change in the employment of respondents after expropriation

Before Expropriation			After Expropriation		
Emp. Status	N	%	Emp. Status	N	%
Only Agriculture	185	53	Unemployed	115	33
Agriculture & related	162	46.4	Employed	86	24.6
Unemployed	2	0.6	Temporary jobs	148	42.4

(Source: Own Survey, 2020)

As (Table 4.6) shown, a comparative analysis of the employment status of respondents before and after land expropriation. Before expropriation, a majority of the respondents, 53% (185 individuals), were solely engaged in agricultural activities, while 46.4% (162 individuals) were involved in both agriculture and related sectors. Only a small fraction, 0.6% (2 individuals), reported being unemployed prior to expropriation. However, following the expropriation, there is a noticeable shift in employment patterns. A significant portion, 33% (115 individuals), became unemployed, highlighting the negative effect of land expropriation on employment opportunities. Among those who found employment, only 24.6% (86 individuals) secured stable jobs, while a larger share, 42.4% (148 individuals), had to rely on temporary jobs. This shift indicates a considerable decline in agricultural employment and a movement toward more precarious and less stable forms of work, raising concerns about the economic stability and livelihood sustainability of the affected farmers.

c) Loss of crop Production and caused Food self-insufficiency

The land expropriation also caused food self-insufficiency as the farmers who lose their land become dependent on food purchase and aids. This caused food insecurity and malnutrition, especially farmers who totally stopped food production by themselves.

In an interview on march 8, 2021, an expropriated farmer shared with me the condition of his life before and after the expropriation of his land as follows;

"…. In the past, I was actively engaged in the cultivation of crops, raising of animals, and cultivation of fruits and vegetables, a livelihood that generates a substantial income. However, due to the expropriation, my once-thriving source of sustenance has been taken away. The effect has been severe, now I am struggling to provide even necessities for my family and unable to generate any income. The loss of my productive land has pushed me into a state of food insufficiency, creating a shocking contrast to the comfort that once I enjoyed. Currently, I rely solely on a monthly allowance provided by the government for survival. Unfortunately, this allowance falls significantly short of covering the essential expenses for my family, dropping me into a critical state of poverty."

d) Change in Livelihood and Satisfaction after expropriation

Table 4.7 Change in Livelihood and Satisfaction of Respondents after expropriation

Attributes	**Categories**	**Frequency**	**Percent**
Livelihood Change	Improved	103	29.5
	Worsened	142	40.7
	Unchanged	104	29.8
Livelihood Satisfaction	VS & satisfied	80	23
	Neutral/Somewhat	121	34.7
	Dissatisfied & VD	148	42.3

(Source: Own Survey, 2020)

Farmers were also asked to what extent their livelihood was changed because of the expropriation. The majority believe that their livelihood remained unchanged compared to the situation before expropriation. While, nearly 30 percent of them confirmed that,

their livelihood situation has worsened than before mainly due to the loss of land and related assets by the expropriation. However, 29.5 percent of the respondents assured that their livelihood situation has improved after expropriation related to opportunities created in the form of employment and minor business activities.

Regarding respondent's current livelihood satisfaction (see Table 4.7), it is only 23 percent of the farmers feel satisfaction with their current livelihood. The majority i.e., 42.3 percent of the respondents reported that they feel dissatisfaction about their livelihood situation after expropriation. Whereas 34.7 percent of the respondent farmers stayed neutral or indifferent to expressing their level of satisfaction or dissatisfaction with their condition of livelihood after the expropriation.

e) Loss of Landholding Rights and Displacement

The expropriation process had a profound and multifaceted effect on the farmers' landholding and use rights, as highlighted during the group discussions. The forced dislocation from their homes resulted in the immediate loss of shelter and personal security, leading to significant disruptions in their daily lives. Many farmers were abruptly removed from properties that had long been integral to their identity, heritage, and livelihood. This displacement was not just a physical relocation but also a severe emotional and psychological burden, undermining their sense of stability and well-being.

As the interview and FGD's confirmed, the expropriation was challenged with issues of inadequate compensation and insufficient consultation, which compounded the farmers' difficulties. The compensation offered was frequently criticized for failing to cover the true value of the lost land and properties, leaving many farmers struggling to recover from the financial losses and the impact on their livelihoods. The process was also marked by a lack of transparency and engagement with the affected individuals, who were not adequately informed or involved in the decision-making process. This absence of meaningful consultation led to a heightened sense of injustice and frustration among the farmers, as they felt their voices were ignored and their rights were trampled.

Repeatedly occurring legal disputes further exacerbated the situation, with farmers finding themselves entangled in protracted legal battles over the inadequacy of the compensation and the procedural shortcomings of the expropriation process. The legal challenges often involved bureaucratic delays and complex hurdles, which added to the farmers' sense of disenfranchisement and frustration. The disputes highlighted the systemic issues within the expropriation process, including the need for more equitable compensation mechanisms and more inclusive decision-making practices.

The expropriation had a profound and adverse effect on the farmers' landholding and use rights, leaving them in a state of distress and displacement. The combination of inadequate compensation, lack of proper consultation, and legal challenges underscored the need for a more transparent, fair, and consultative approach to land expropriation. Addressing these issues is crucial for restoring the rights of affected individuals and supporting their recovery, ensuring that future expropriations are conducted with greater sensitivity and respect for the affected communities.

4.2.5 Resettlement and Livelihood Restoration Supports

The evaluation process involved gathering feedback from displaced farmers regarding their experiences with the restoration efforts. This feedback is crucial for assessing both the adequacy and impact of the support mechanisms. By examining respondents' views on various aspects of the restoration programs such as the timeliness, fairness, and comprehensiveness of the assistance provided the study aims to identify strengths and weaknesses in the current approach.

Key areas of focus include the effectiveness of financial compensation, the adequacy of alternative housing solutions, and the success of livelihood support initiatives, such as job training, financial assistance, and access to new agricultural opportunities. The study also explores how well these measures have helped restore the displaced farmers' pre-expropriation standard of living and their overall satisfaction with the recovery process.

Additionally, the study considered the broader socio-economic impacts of the restoration efforts, such as improvements in the quality of life, social integration, and economic stability of the affected farmers. By analyzing respondents' feedback and attitudes, the

study aims to provide a nuanced understanding of how well the livelihood restoration mechanisms have met their intended goals and to offer recommendations for enhancing future support strategies.

Measurement Models

The livelihood restoration mechanism represented by the following independent variables showed an excellent Cronbach's alpha results; land and resource access 0.872, compensation amount (mainly in the form of money 0.872, various development assistance 0.89, job creation and adequate income sources 0.775, keeping good social network 0.813 and perceived economic security 0.813. The reliability of the study was also checked by referring coefficients of factor loading in each latent variable. Accordingly, the coefficients of psychological wellbeing of farmers and participation during the planning process of resettlement and rehabilitation are less than 0.6 therefore the two independent variables deleted and not considered in the study.

Although Cronbach's alpha (CA) is not an element of structural equation modelling (SEM), it is widely utilized reliability coefficient in applying SEM (Cho, 2016). Moreover, the minimum coefficient of CA differed in one study from the other. According to Lance et al (2016) CA of 0.7 is sufficient for a reliability test, and it is determined to be modest result. However, according to Carmines and Zeller (1979) a CA of 0.8 reliability test is a standard measure. In addition, if CA is highly variable among constructs in the latent variable, it is not properly represent the latent variable (Gerbing & Anderson, 1988). Considering those facts the CA of this study is within and above the standard indicated in many literatures.

To assess the validity of the study, three key statistical methods were employed: factor loading, composite reliability (CR), and average variance extracted (AVE).

a) Factor Loading

In this study, all factor loadings exceeded 0.6, confirming their reliability for inclusion in the analysis. As explained by Namahoot and Rattanawiboonsom (2022), represents the relationship between observed variables and their corresponding latent variables. For

each item within the latent variables, a factor loading of 0.6 or higher is required; items with coefficients below this threshold are excluded from the study.

b) Composite reliability (CR)

The composite reliability results in this study demonstrated strong reliability across all constructs, with values ranging from 0.844 to 0.936. These high CR values indicate that the items used to measure each construct; Land & Resource (0.857), Compensation (0.921), Development Assistance (0.883), Job & Income (0.914), Perceived Economic Security (0.844), and Social Network (0.936) are consistent and reliable, ensuring that the constructs are measured accurately and consistently within the study.

Composite reliability measures the degree to which all elements are free from random error, is a more appropriate indicator of data reliability. According to Hair et al. (2009), a CR value of 0.7 or higher is considered indicative of good reliability, meaning that the error variance should be less than 30% for the latent variables.

Table 4.8 Cronbach's alpha, CR, AVE & discriminant validity

Construct	CR	CA	AVE	Land & Resource	Compensation	Dev't Assistance	Job & Income	Perceived Economic Security	Social Network
Land & Resource	0.857	0.872	0.523	**0.723**					
Compensation	0.921	0.872	0.575	0.45	**0.758**				
Development Assistance	0.883	0.89	0.523	0.5	0.6	**0.723**			
Job & Income	0.914	0.775	0.606	0.55	0.65	0.58	**0.778**		
Perceived Economic Security	0.844	0.813	0.448	0.48	0.5	0.52	0.57	**0.669**	
Social Network	0.936	0.854	0.669	0.46	0.54	0.56	0.6	0.53	**0.818**

(Source: Own Survey, 2020)

c) The Average Variance Extracted (AVE)

Results for the constructs in the study indicated the level of variance captured by the constructs relative to the variance due to measurement error. The AVE values for most constructs are above the commonly accepted threshold of 0.50, suggesting that a significant portion of the variance is explained by the underlying construct. Specifically, Land & Resource (0.523), Compensation (0.575), Development Assistance (0.523), Job & Income (0.606), and Social Network (0.669) all demonstrate acceptable levels of AVE, indicating that these constructs have good convergent validity. The Average Variance Extracted (AVE) for Perceived Economic Security construct is 0.448, which is slightly below the commonly accepted threshold of 0.50. While this value suggests that the construct explains a moderate portion of the variance in its indicators, it is close to the threshold, indicating that the construct still captures a meaningful level of variance. This result suggests that Perceived Economic Security is a relatively reliable construct, though there may be room for improvement by refining the indicators to enhance its overall explanatory power.

Moreover, the assessment of discriminant validity for the constructs in the study on livelihood restoration of farmers in peri-urban areas of Addis Ababa demonstrated that all constructs meet the standard criteria for discriminant validity. For each construct, the square root of the Average Variance Extracted (AVE) was compared with its correlations with other constructs.

The results showed that Land & Resource (0.723), Compensation (0.758), Development Assistance (0.723), Job & Income (0.778), Perceived Economic Security (0.669), and Social Network (0.818) all have AVE square roots that are higher than the correlations with other constructs. This indicated that each construct is distinct and captures a unique aspect of livelihood restoration, confirming strong discriminant validity across the study. These results suggested that the constructs are well-defined and effectively differentiated from one another within the context of this research.

Discriminant validity is another important method of ensure the validity of the study. It deals with each indicator load unique only one construct. It mainly focuses on uniqueness

of each of the indicator loading and only measure one construct not two or more. The statistical test that able to measure discriminant validity is whether the correlation between two constructs is statistically significantly less than the unity. Moreover, the constructs of a latent variable have a superior power to measure variance of its own than the constructs of other latent variables, therefore, the square root of average variance extracted (AVE) have to higher than the latent variables of the correlations in all other constructs (Hair Junior et al., 2014). This criterion was implied in Fornell and Larcker's (1981) model, wherein they hypothesized no cross-loaded indicators.

Model Fit Index

The analysis of the model fit for the study on the "Livelihood Restoration Mechanism of Addis Ababa City Administration on Evicted Peri-Urban Farmers" offers a comprehensive understanding of how various independent variables; Land & Resource Compensation, Development Assistance, Job & Income, Perceived Economic Security, and Social Network impact the dependent variable, Livelihood Restoration. Starting with the Chi-square statistic (CMIN), the Default model yielded a CMIN value of 491.789 with 277 degrees of freedom, resulting in a CMIN/DF ratio of 1.775. The resulting ratio of 1.775 is particularly significant, as it suggested that the model effectively captured the complex interplay between the independent variables and Livelihood Restoration without introducing unnecessary complexity, thereby indicating a robust model fit. According to Marsh et al. (2004) a CMIN/DF ratio less than or equal to 3 indicates an acceptable fit, while values up to 5 are considered reasonable.

The Root Mean Square Error of Approximation (RMSEA) further supported the adequacy of the model. The RMSEA value for the Default model is reported to be within acceptable limits at 0.050. The RMSEA value of 0.050 indicated that the model's assumptions about the relationships between Land & Resource Compensation, Development Assistance, Job & Income, Perceived Economic Security, Social Network, and Livelihood Restoration are well-aligned with the actual data, suggesting a model that fits the population covariance matrix well. According to (MacCallum et al., 1996), an

RMSEA value of less than or equal to 0.05 is considered excellent, while values up to 0.08 are deemed acceptable.

This high GFI score indicated that the selected independent variables are significant contributors to the livelihood restoration of the affected peri-urban farmers. The Goodness of Fit Index (GFI) of 0.904, as discussed by Cucos (2022), suggested that the model explains over 90% of the variance in the data, which is a substantial achievement. According to Tabachnick and Fidell (2007), the Adjusted Goodness of Fit Index (AGFI) of 0.878, which adjusts for the number of degrees of freedom, remains close to the acceptable threshold, reinforcing that the model's fit is reasonable even when considering its complexity.

The Parsimony Goodness of Fit Index (PGFI) of 0.713, while lower than other indices, reflected a balance between model simplicity and explanatory power. As Cucos (2022) notes, this balance is crucial in structural equation modelling to avoid over fitting while still capturing the essential relationships among the variables. The PGFI suggests that the model maintains appropriate parsimony, meaning it is not overly complex, yet still effectively explains the data. The Baseline Comparisons, particularly the Normed Fit Index (NFI) of 0.908 and the Comparative Fit Index (CFI) of 0.957, provide additional evidence of the model's adequacy (West et al., 2012). These indices compare the fit of the Default model to that of a baseline model that assumes no relationships among the variables. According to Cucos (2022), high values for NFI and CFI indicate that the Default model represents a significant improvement over the baseline model, underlining the meaningful contributions of the independent variables to Livelihood Restoration. Furthermore, the Tucker-Lewis Index (TLI) of 0.950 and the Incremental Fit Index (IFI) of 0.958 align with the criteria set by Cucos (2022), where values close to or exceeding 0.95 indicate an excellent fit. These indices confirm that the model not only fits the data well but does so while accounting for potential complexities and interdependencies among the variables.

Table 4.9 Model Fitness Criteria, Result and Decision

Model Fit Criteria	Model Fit Result	Decision	Author
A CMIN/DF ratio of less than 5 is Excellent fit	1.775	Excellent fit	Cucos, 2022
GFI b/n 0.90 and 0.95 are acceptable fit & GFI above 0.95 are excellent fit	0.904	Acceptable fit	Cucos, 2022
AGFI values > 0.90 show an acceptable fit, while > 0.95 indicate a good fit	0.878	Slightly below acceptable fit	Tabachnick & Fidell, 2007
PGFI value of 0.5 or greater indicates an acceptable fit	0.713	Acceptable fit	Cucos, 2022
NFI values above 0.95 is a good fit, NFI b/n 0.90 and 0.95 is an acceptable fit, and values below 0.90 shows a poor fit.	0.908	Acceptable fit	West et al., 2012; Cucos, 2022
TLI Value > 0.9 acceptable, >0.95 excellent fit	0.95	Excellent fit	West et al., 2012; Cucos, 2022
A CFI ≥ 0.90 is an acceptable fit. A CFI ≥ 0.95 is excellent fit for the model	0.957	Excellent fit	West et al., 2012; Cucos, 2022
RMSEA below 0.05 is good fit, a RMSEA b/n 0.05 and 0.08 is acceptable fit, and a RMSEA above 0.10 is poor fit	0.05	Excellent fit	MacCallum et al., 1996

(Source: Own Survey, 2020)

Structural Equation Model and Hypothesis Testing

The hypothesis testing results for the study on "Livelihood Restoration Mechanisms of Addis Ababa City Administration on Evicted Peri-Urban Farmers" reveal significant insights into the factors influencing livelihood restoration. Each independent variable's impact on the dependent variable, Livelihood Restoration, is assessed using structural equation modelling, where the estimates, standard errors (S.E.), critical ratios (C.R.), and p-values (P) provide a detailed understanding of these relationships.

Starting with Development Support, the analysis shows an estimate of 0.204, a standard error of 0.076, a critical ratio of 2.693, and a p-value of 0.007. The p-value indicates a statistically significant relationship at the 0.05 level, confirming that Development Support plays a crucial role in enhancing Livelihood Restoration among evicted peri-urban farmers. This finding suggests that as development support such as training, access to resources, and financial assistance increases, so does the capacity of these farmers to re-establish their livelihoods. The significance of this variable underscores the necessity for robust development programs tailored to the specific needs of displaced farmers.

Table 4.10 Result of structural equation model

Dependent Variables		Independent Variables	Estimate	S.E.	C.R.	P	Label
Perceived Economic Security	<---	Compensation	.335	.117	2.861	.004	
	<---	Land_Infra	.038	.053	.724	.469	
	<---	Income	.020	.099	.203	.839	
	<---	Sociocultural	.188	.065	2.869	.004	
	<---	Devet_Support	.199	.072	2.779	.005	
Dependent Variables		**Estimate**	**S.E.**	**C.R.**	**P**	**Label**	
Livelihood Restoration	<---	Dev't_Support	.204	.076	2.693	.007	
	<---	Socio-cultural	.161	.069	2.315	.021	
	<---	Compensation	.330	.125	2.639	.008	
	<---	Income	.272	.103	2.657	.008	
	<---	Land_Infra	.027	.054	.493	.622	
	<---	Perceived Economic Security	.212	.087	2.436	.015	

(Source: Own Survey, 2020)

Socio-cultural Factors also demonstrated a meaningful impact on Livelihood Restoration, with an estimate of 0.161, a standard error of 0.069, a critical ratio of 2.315, and a p-value of 0.021. This statistically significant result highlighted the importance of social and cultural networks in the process of livelihood restoration. These networks likely provided social capital, community support, and access to informal resources, all of which are vital for farmers transitioning to new livelihoods. The positive relationship between socio-cultural factors and livelihood restoration suggested that policymakers should consider these elements when design resettlement and restoration strategies.

The Compensation variable is another critical factor, with an estimate of 0.330, a standard error of 0.125, a critical ratio of 2.639, and a p-value of 0.008. The strong, positive estimate and the statistically significant p-value indicated that fair and adequate compensation is crucial for livelihood restoration. Compensation likely provided the financial means necessary for farmers to invest in new land, tools, or other resources required to rebuild their livelihoods. The result emphasized the need for compensation schemes to be carefully designed and sufficiently funded to ensure that displaced farmers can recover economically.

Income Opportunities are also significantly associated with Livelihood Restoration, as evidenced by an estimate of 0.272, a standard error of 0.103, a critical ratio of 2.657, and a p-value of 0.008. The positive and significant relationship indicated that access to new or alternative income sources is a vital component of restoring livelihoods. This finding suggested that efforts to create job opportunities facilitated access to markets, or support entrepreneurial activities can have a substantial impact on the economic recovery of evicted farmers.

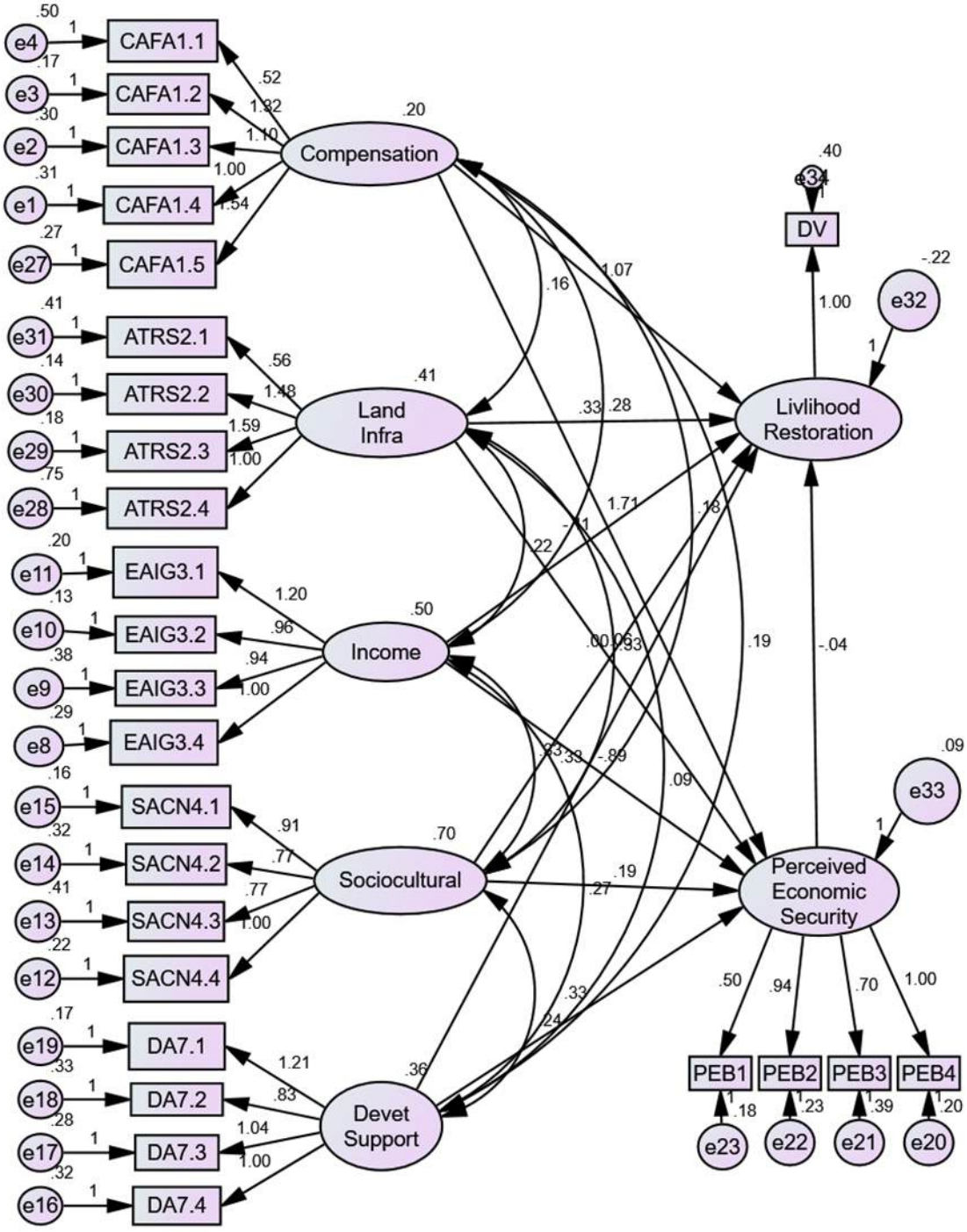

Figure 4.4 Result of Structural Equation Modelling

However, the variable Land and Infrastructure does not show a significant impact on Livelihood Restoration, with an estimate of 0.027, a standard error of 0.054, a critical ratio of 0.493, and a p-value of 0.622. The lack of statistical significance suggested that, in this context, simply providing land or improving infrastructure alone is insufficient to guarantee livelihood restoration. This result implied that while land and infrastructure are necessary components of resettlement, they must be complemented by other forms of support, such as those highlighted above, to be effective.

Finally, Perceived Economic Security significantly influenced Livelihood Restoration, as demonstrated by an estimate of 0.212, a standard error of 0.087, a critical ratio of 2.436, and a p-value of 0.015. This result indicated that the perception of economic stability and security among farmers plays a crucial role in the successful restoration of their livelihoods following dislocation. When farmers feel secured about their economic future, they are more likely to experience positive outcomes in their efforts to rebuild and stabilize their livelihoods. This finding underscored the importance of fostering a sense of economic security for displaced individuals, as it significantly impacts their ability to achieve effective livelihood restoration. Ensuring that farmers perceive their economic situation as secure can greatly enhance their capacity to recover and thrive in new environments.

Mediating Role of Farmers Perceived Economic Benefits

The analysis of farmers' Perceived Economic Benefits in relation to their livelihood restoration revealed the crucial role that these perceptions play in shaping their successful transition after displacement. The study highlighted the importance of farmers' perceptions of economic benefits, which encompass various aspects such as compensation, land and infrastructure provision, income and job creation, socio-cultural factors, and development support.

Compensation emerged as a significant factor influencing farmers perceived economic benefits, with an estimate of 0.335 and a p-value of 0.004. This result indicated a robust relationship between the fairness and adequacy of compensation packages and farmers' perceptions of their economic security. When farmers perceive the compensation, they

receive as fair and sufficient to cover their losses, it directly enhances their sense of economic security. This perception is crucial because it affected their confidence in the resettlement process and their subsequent efforts to restore their livelihoods. Adequate compensation can alleviate financial stress and provided a foundation for rebuilding, thereby contributing to a more successful livelihood restoration.

In contrast, the provision of land and infrastructure showed a non-significant direct effect on perceived economic benefits, with an estimate of 0.038 and a p-value of 0.469. Although this result suggested that the direct impact of land and infrastructure on farmers' perceptions of economic benefits is not statistically significant, it does not imply that these factors are irrelevant. Instead, it highlighted the complex nature of how land and infrastructure contribute to perceived economic benefits. The process of allocating land and developing infrastructure involved significant input from farmers to ensure that these provisions meet their specific needs and preferences. Effective collaboration in these decisions enhance the perceived adequacy of these provisions. However, the lack of direct significance reflects a need for more complete measures of how these factors impact economic security or variations in individual experiences that are not fully captured by the current metrics.

Income and job creation also presented a non-significant direct effect on perceived economic benefits, with an estimate of 0.020 and a p-value of 0.839. This result suggested that while income and job opportunities are crucial for farmers, the direct effect of their perception of these opportunities on economic benefits may not be immediately apparent. The significance of this finding may be influenced by factors such as the availability of suitable job opportunities, the alignment of these opportunities with farmers' skills, and the overall economic conditions in the new settlement. Despite the lack of direct significance, it is essential to recognize that farmers' perceptions of income and job creation are integral to their overall economic security. Effective planning and support in generating viable economic opportunities are necessary to foster positive perceptions and support successful livelihood restoration.

Sociocultural factors showed a significant impact on perceived economic benefits, with an estimate of 0.188 and a p-value of 0.004. This result underlined the importance of maintaining farmers' socio-cultural practices and community ties in enhancing their economic security. When farmers perceive that their cultural needs and social structures are respected in new settlements, it fosters a sense of stability and belonging. This perception is crucial for their overall economic security, as it provided a supportive and familiar social context that contributed to their ability to restore their livelihoods effectively.

Development support significantly influenced farmers perceived economic benefits, with an estimate of 0.199 and a p-value of 0.005. The provision of relevant and effective development support, such as training and technical assistance, played a crucial role in enhancing farmers' perceptions of their economic security. When farmers perceive that the support provided is practical and tailored to their needs, it boosts their confidence in their ability to rebuild their livelihoods. This positive perception is essential to achieve sustainable livelihood restoration, as it ensures that the support aligned with farmers' specific circumstances and needs.

Direct, Indirect and Total Effect

The analysis of the direct, indirect, and total effects of various factors on Livelihood Restoration, with a particular focus on how Perceived Economic Benefits acts as a mediating variable, revealed a complex interplay of influences. This detailed examination provided a deeper understanding of how different factors, including Land & Infrastructure, Development Support, Sociocultural Factors, Income, and Compensation, contributed to livelihood outcomes. The confidence intervals and p-values associated with each effect provided insight into the significance and direction of these relationships.

Starting with the impact of Land & Infrastructure on Livelihood Restoration, the direct effect analysis presented a confidence interval ranging from -0.094 to 0.150, with a corresponding p-value of 0.675. This wide confidence interval, which includes zero, indicates that the direct effect of Land & Infrastructure on Livelihood Restoration is

statistically insignificant. The presence of zero within the interval suggested that any positive or negative impact of Land & Infrastructure on livelihoods is not strong enough to be considered significant. The p-value, which is much higher than the commonly accepted threshold of 0.05, further supported this conclusion, indicating that there is no substantial evidence to reject the null hypothesis that Land & Infrastructure has no direct effect on Livelihood Restoration. The indirect effect of Land & Infrastructure, mediated through Perceived Economic Benefits, is also examined. Here, the confidence interval ranges from -0.013 to 0.051, with a p-value of 0.331. Again, the inclusion of zero in the confidence interval indicated that the indirect effect is not statistically significant. The p-value, which exceeds 0.05, supported this, suggesting that Perceived economic security does not significantly mediate the relationship between Land & Infrastructure and Livelihood Restoration. Finally, the total effect, which combines both direct and indirect effects, is evaluated with a confidence interval from -0.088 to 0.158 and a p-value of 0.590. The lack of statistical significance in this total effect further reinforced the conclusion that Land & Infrastructure does not play a meaningful role in affecting Livelihood Restoration, either directly or indirectly. This finding is crucial as it suggested that efforts to improve livelihoods through infrastructure development alone may not yield significant results unless other factors or mechanisms are also considered.

However, Development Support demonstrates a more pronounced effect on Livelihood Restoration. The direct effect of Development Support has a confidence interval that ranges from 0.001 to 0.409, with a p-value of 0.049. Unlike Land & Infrastructure, the confidence interval for Development Support does not include zero, which implies that the direct effect is statistically significant. The p-value of 0.049, which is just below the 0.05 threshold, further confirms the significance of this effect. This indicates that Development Support has a direct and positive impact on Livelihood Restoration, meaning that as Development Support increases, so does the likelihood of successful livelihood restoration. This could be due to the resources, training, or financial assistance provided through development programs, which directly enhance the ability of individuals and communities to restore their livelihoods after displacement or disruption. The indirect effect of Development Support, mediated through Perceived Economic Benefits, is also significant. The confidence interval for this indirect effect ranges from

0.002 to 0.121, with a p-value of 0.037. The fact that zero is not included in the confidence interval suggested that the mediation effect is statistically significant, and the p-value further supports this conclusion. This indicates that part of the positive impact of Development Support on Livelihood Restoration is channelled through farmers perceived economic benefits. In other words, Perceived Economic Benefits not only provided direct financial and material advantages but also enhanced individuals' overall economic stability and confidence, which in turn significantly improves their ability to restore their livelihoods. The total effect of Perceived Economic Benefits, which includes both direct impacts and the broader influence on individuals' perceptions of their economic security, is notably significant, with a confidence interval ranging from 0.049 to 0.444 and a p-value of 0.013. This finding highlighted the comprehensive impact of Perceived Economic Benefits on Livelihood Restoration, demonstrating that they are crucial for not only addressing immediate financial needs but also for bolstering overall economic security.

Sociocultural Factors also exhibited significant effects on Livelihood Restoration. The direct effect of Sociocultural Factors is reflected in a confidence interval from 0.001 to 0.318, with a p-value of 0.047. This indicated that these factors, including community norms, social networks, and cultural practices, have a statistically significant direct influence on Livelihood Restoration. Sociocultural factors can offer essential social support, foster collective action, and leverage shared knowledge, all of which contribute to enhancing the resilience and adaptability of communities, thereby improving livelihood outcomes. The indirect effect of Sociocultural Factors, mediated by Perceived Economic Benefits, has a confidence interval from 0.002 to 0.113 and a p-value of 0.034, both indicating statistical significance. This suggested that the positive impact of Sociocultural Factors on Livelihood Restoration is partly mediated through individuals' perceptions of their economic security. When farmers perceive economic benefits as being substantial and reliable, this perception can amplify the benefits derived from sociocultural factors. Thus, the empowerment and improved economic stability associated with perceived benefits can enhance the positive effects of sociocultural factors, leading to more effective livelihood restoration.

Income and Compensation are also key factors in this analysis. The direct effect of Income on Livelihood Restoration has a confidence interval from 0.032 to 0.532 and a p-value of 0.029, both indicating statistical significance. This suggested that higher income levels directly contributed to better livelihood restoration outcomes, possibly by providing the financial resources needed to rebuild lives, invest in new opportunities, or access services. The indirect effect of Income, mediated through Perceived Economic Benefits, is not significant, with a confidence interval from -0.046 to 0.072 and a p-value of 0.741. The inclusion of zero within the confidence interval suggested that perceived economic benefits do not significantly mediate the relationship between Income and Livelihood Restoration. This implies that while perceived economic benefits contributed a significant role in enhancing overall economic security, they do not notably influence how income translates into improved livelihood restoration outcomes. However, the total effect of Income, which is significant, with a confidence interval from 0.027 to 0.535 and a p-value of 0.034, indicated that income played a critical role in supporting livelihood restoration, primarily through its direct impact. This highlighted that while perceived economic benefits might not mediate this relationship, the direct influence of income remains crucial for effective livelihood restoration.

Compensation, as a factor, showed a direct effect with a confidence interval from 0.013 to 0.662 and a p-value of 0.042, indicating significance. This suggested that compensation provided to displaced individuals or communities has a direct and positive impact on their ability to restore their livelihoods. This effect is likely due to the financial support or restitution that compensation provides, enabling individuals to replace lost assets, invest in new opportunities, or stabilize their economic situation. While the indirect effect of Compensation, mediated through Perceived Economic Benefits, is not significant, as indicated by the confidence interval from -0.007 to 0.206 and a p-value of 0.026. This implied that while compensation directly influences livelihood restoration, the perceived economic benefits do not significantly mediate this relationship. This suggested that although perceived economic benefits influenced individuals' overall sense of economic security, they do not substantially affect how compensation translates into livelihood restoration outcomes. The total effect of Compensation on Livelihood Restoration, which includes both direct and indirect influences, is reflected in a

confidence interval ranging from 0.040 to 0.793 with a p-value of 0.017, indicating a statistically significant overall impact. This finding suggested that while compensation primarily affects livelihoods directly, its overall contribution to restoration efforts is substantial, providing essential financial support that facilitates recovery.

Table 4.11 Results of direct, indirect, and total effects as attitude a mediating variable

Relationship	Direct Effect	Indirect Effect	Total Effect	Confidence Interval	p-value	Conclusion on Indirect Effects
Land & Infrastructure => Perceived Eco Security => Livelihood Restoration	-0.094	-0.013	-0.088	-0.094 to 0.150	0.675	No mediation (Zero between upper and lower confidence interval and insignificant p-value)
Development Support => Perceived Eco Security => Livelihood Restoration	0.001	0.037	0.049	0.001 to 0.409	0.049	Partial mediation (No zero between upper and lower confidence interval, significance p-value, and significant direct effect)
Sociocultural Factors => Perceived Eco Security => Livelihood Restoration	0.001	0.034	0.058	0.001 to 0.318	0.047	Partial mediation (No zero between upper and lower confidence interval, significance p-value, and significant direct effect)
Income => Perceived Eco Security => Livelihood Restoration	0.032	-0.046	0.027	-0.046 to 0.072	0.741	No mediation (Zero between upper and lower confidence interval and insignificant p-value)
Compensation => Involvement => Livelihood Restoration	0.013	-0.007	0.04	-0.007 to 0.662	0.042	Partial mediation (No zero between upper and lower confidence interval, significance p-value, and significant direct effect)

(Source: Own Survey, 2020)

The indirect effects of these factors through Perceived Economic Benefits warrant particular attention. In the cases of Development Support, Sociocultural Factors, and Compensation, the mediation analysis revealed that Perceived Economic Benefits played a crucial role in enhancing the impact of these factors on Livelihood Restoration. This highlighted the importance of understanding how individuals perceive the economic benefits they receive. When individuals perceive these benefits as substantial and supportive, they are more likely to feel secure and engaged in the restoration process, leading to better outcomes. This perception not only amplified the direct benefits of support mechanisms like development aid and compensation but also fostered a sense of economic security and confidence critical for sustainable livelihood restoration. The significant indirect effects associated with Development Support and Sociocultural Factors suggested that these elements are particularly effective when individuals perceive their economic benefits as substantial, highlighting the value of ensuring that support mechanisms are perceived as effective and beneficial in post-displacement recovery strategies.

On the other hand, the total effects observed in the analysis, which combine both direct and indirect influences, provided a holistic view of how each factor contributed to Livelihood Restoration. For instance, the significant total effects of Development Support, Sociocultural Factors, Income, and Compensation indicated that these factors are crucial drivers of livelihood restoration, each contributing in multiple ways. The combination of direct assistance, such as financial support or infrastructure, with the positive perception of economic benefits, created a synergistic impact that enhances the overall effectiveness of livelihood restoration efforts. This finding is critical for policymakers and development practitioners, as it emphasized the need to design interventions that not only provide material support but also ensured that affected communities perceive these supports as beneficial and supportive.

Overall, the detailed analysis reveals that Development Support, Sociocultural Factors, Income, and Compensation are key determinants of successful Livelihood Restoration. Each of these factors contributed significantly, both directly and indirectly, to improved livelihood outcomes. The role of Perceived Economic Benefits as a mediating variable

was particularly noteworthy, as it enhances the impact of these factors by fostering greater economic security and confidence among the affected populations. The insignificant effects of Land & Infrastructure suggest that without complementary interventions, infrastructure alone may not be sufficient to restore livelihoods effectively.

Multi Group Analysis of Farmers in Educational Status

The multilevel analysis conducted in this study used to explore the complex relationships between various factors that influence livelihood restoration and perceived economic security, particularly in the context of different education levels. By categorizing the data according to educational attainment, the analysis aims to understand how these factors such as income, compensation, development support, and sociocultural influences impact individuals with varying educational backgrounds. This approach allowed for a more nuanced understanding of how educational levels mediate the effects of these variables on livelihood outcomes. The multilevel analysis is essential in capturing the hierarchical structure of the data, where individual outcomes are influenced by both personal attributes (like education) and broader socio-economic interventions. This layered approach helped to identify not just the direct impacts of these factors but also how their effects vary across different segments of the population.

Table 4.12 Results of Multi Group Analysis among Farmers in Educational Status

Dependent Variables	Independent Variables	Not attend at all		Read and write		Primarily 1-8		Secondary 9-12		Certificate		Diploma and above	
		Estimate	P	Estimate	P	Estimate	P	Estimate	P	Estimate	P	Estimate	P
Perceived Economic Security	Compensation	0.134	0.546	0.412	0.679	0.304	0.039	1.315	0.314	8.41	0.796	1.709	0.249
	Land and Infrastructure	0.063	0.47	0.163	0.643	-0.161	0.154	-0.625	0.501	3.742	0.787	0.06	0.89
	Income and Job	0.252	0.261	-0.211	0.746	0.068	0.683	-0.344	0.532	-4.017	0.801	-0.894	0.164
	Sociocultural	0.156	0.182	-0.002	0.983	0.201	0.084	1.352	0.342	-5.267	0.803	0.189	0.532
	Development Support	0.149	0.192	0.279	0.489	0.399	0.014	-0.684	0.479	-0.422	0.919	0.329	0.509
Livelihood	Development Support	-0.04	0.755	-0.661	0.562	0.42	0.027	-0.059	0.951	0.829	0.048	0.327	0.37
Restoration	Sociocultural	0.151	0.252	0.365	0.135	0.125	0.328	0.6	0.715	0.058	0.907	0.002	0.996
	Compensation	0.037	0.885	1.229	0.64	0.247	0.138	0.748	0.631	1.107	0.177	1.066	0.535
	Income	0.66	0.012	0.021	0.991	0.228	0.2	0.136	0.793	-0.396	0.281	-0.105	0.897
	Land and Infrastructure	0.064	0.517	-0.937	0.331	0.109	0.378	-0.168	0.854	0.167	0.702	0.33	0.319
	Perceived Economic Security	0.183	0.251	1.527	0.388	0.103	0.595	0.112	0.87	-0.497	0.426	-0.041	0.934

(Source: Own Survey, 2020)

The significant results of the analysis provided critical insights into the dynamics of livelihood restoration and perceived economic security. For instance, the strong positive relationship between income and livelihood restoration is particularly noteworthy. With an estimate of 0.66 and a p-value of 0.012, the analysis revealed that higher income levels significantly enhance the ability of individuals to restore their livelihoods. This finding underscored the importance of financial resources in recovery efforts, as those with greater income can more effectively rebuild, invest in new opportunities, and access necessary services. Additionally, the relationship between compensation and perceived economic security among those with a primary education (grades 1-8) was significant, with an estimate of 0.304 and a p-value of 0.039. This suggested that compensation was a vital component in providing economic stability to individuals with basic education, likely because it offered immediate financial relief that used to replace lost assets or secure their economic situation.

Another significant finding was the impact of development support on both perceived economic security and livelihood restoration, particularly for those with a primary education and those holding a certificate. Development support significantly influenced perceived economic security for individuals with a certificate, as indicated by an estimate of 0.829 and a p-value of 0.048. This suggested that development initiatives targeting individuals with some formal training can substantially enhanced their economic confidence. For those with a primary education, development support also significantly improved livelihood restoration, with an estimate of 0.399 and a p-value of 0.014. This highlighted the effectiveness of development programs in assisting lower-educated individuals by providing them with the resources or infrastructure necessary for recovery.

However, the analysis also revealed that most of the results are statistically insignificant. This was particularly evident in the relationships involving land and infrastructure, sociocultural factors, and some levels of compensation and income. The lack of significance in these findings could be attributed to the small sample sizes within each educational category, which may not provide enough statistical power to detect meaningful differences. When sample sizes are small, the variability within the data can be high, making it difficult to achieve statistical significance even when there might be a

true effect. This limitation highlighted the need for larger, more representative samples to better understand the complex interactions between these factors and to draw more robust conclusions from the analysis.

4.3 DISCUSSIONS

4.3.1 Legal and Policy framework Governing Land Expropriation

Ethiopia's legal and policy frameworks for land expropriation have evolved significantly over the decades, adapting to the growing complexities of urbanization and development needs. The foundational framework was provided by the 1960 Civil Code, which established the basic principles of land expropriation, emphasizing that land should only be acquired for public utility and not for private financial gain. This principle was intended to ensure that land expropriation serves broader societal interests rather than individual or corporate profit. However, the practical application of this principle has faced challenges, particularly in balancing the needs of development with the rights of landholders (Tura, 2018; Abdo, 2015; Ambaye, 2013).

The 1995 Federal Democratic Republic of Ethiopia (FDRE) Constitution further stipulated land ownership and use rights, providing a more comprehensive legal foundation for land expropriation and compensation. Article 40 of the Constitution asserted that all land and natural resources are owned by the state and the people of Ethiopia. This provision aimed to prevent land sales or private exchanges, reinforcing state ownership and control. While the Constitution protected the rights of peasants and pastoralists to access land and prohibited eviction without compensation, it allowed for expropriation if it serves public interest purposes (FDRE Constitution, 1995). However, the broad and somewhat vague definition of "public purpose" was a contentious issue. It has led to interpretations that could potentially broaden the scope of expropriation beyond its intended purpose, raising concerns about the fairness and scope of land acquisition practices (Tadesse & Baye, 2024; Gebremichael, 2016; Alemu, 2015; Abdo, 2015).

Proclamation No. 455/2005, enacted as part of the legal framework for land expropriation, provided the initial guidelines for expropriation and compensation. This proclamation mandated that compensation to be based on the replacement cost of

property but faced criticism for its application. Property owners felt inadequately compensated because the valuation frequently reflected the depreciated value of property rather than the cost of replacement (Tura, 2018; Kassa et al., 2011; Yirsaw, 2015). This dissatisfaction highlighted the need for reform in compensation practices.

The subsequent Proclamation No. 1161/2019 was introduced to address the shortcomings of Proclamation No. 455/2005. It introduced the replacement cost principle, requiring compensation to reflect the current cost of replacing expropriated property rather than its depreciated value. This change was intended to enhance fairness and reduce disputes related to compensation (Gemeda et al., 2023; Terfa, 2021; Tesfahun, 2018;). Additionally, Proclamation No. 1161/2019 improved compensation for rural landholders by increasing the compensation multiplier from ten to fifteen times the highest annual income generated in the previous three years, reflecting rising living costs and inflation. This adjustment aimed to provide a more substantial financial cushion for displaced rural communities (FDRE Proclamation No. 1161/2019).

Despite these advancements, challenges persisted in the implementation of these legal frameworks. Studies shown that while the theoretical framework of Proclamation No. 1161/2019 was robust, its practical application revealed inconsistencies and gaps. For instance, the compensation formulas, though improved, often fall short of addressing the full socio-economic impacts of displacement. Rural landholders faced significant economic losses due to the permanent loss of land and associated livelihood opportunities, which the compensation formulas do not fully account for (Tadesse & Baye, 2024; Wabelo, 2020). The experience of Addis Ababa, particularly with the implementation of Directive No. 79/2021, illustrated these gaps. Discrepancies between policy and practice, such as inconsistencies in compensation amounts and resettlement support, underscored the need for more effective policy execution and enforcement (Wabelo, 2020; Tesfahun, 2022).

International standards provided valuable insights for addressing these challenges. The World Bank's Operational Policy 4.12 on Involuntary Resettlement offered a framework that emphasizes fair compensation, community consultation, and the importance of

maintaining or improving living standards for displaced individuals (World Bank, 2004). Comparing Ethiopia's practices with these international standards highlighted areas for improvement. Aligning Ethiopian policies more closely with international best practices could enhance fairness and ensure that displaced individuals receive adequate compensation and support. For example, integrating more comprehensive resettlement packages and ensuring transparent compensation processes address some of the shortcomings identified in the current Ethiopian legal framework (Ababa, 2017; Persson, 2015; Harris, 2015).

Generally, while Ethiopia's legal and policy frameworks for land expropriation have made significant strides, challenges remain in their practical implementation and alignment with international standards. Addressing the gaps identified in previous studies and aligning practices with international norms are crucial for ensuring fair treatment and sustainable livelihood restoration for displaced individuals. Continued legal reforms and improved policy execution are essential to achieving a balance between national development goals and the protection of landholders' rights. The evolution of these frameworks reflects ongoing efforts to improve the fairness and effectiveness of land expropriation processes, but achieving a fully equitable system requires persistent attention to both legal and practical aspects of policy implementation.

4.3.2 The Dynamics of LULC change and land expropriation

Addis Ababa's rapid urbanization over the past two decades has resulted in profound land use and land cover changes, reflecting similar trends observed in other fast-growing African cities. The city's built-up areas expanded significantly to accommodate a growing population driven by natural growth, migration from rural areas, and increased economic activities. According to the study, from 2000 to 2020, the built-up area grew by 25.28%, while agricultural land and vegetation cover diminished significantly by 15.92% and 9.35%, respectively. This spatial transformation reflected the shift in the city's development focus, which prioritizes infrastructure, residential, commercial, and industrial expansion to meet the needs of the growing population in the city. This was substantiated by the findings of Terfa et al (2019) and Ozlu et al (2015).

The expansion of Addis Ababa has largely occurred at the city's peripheries, particularly in the southern, southeastern, and southwestern areas, where rural agricultural lands have been incorporated into the urban fabric. This urban expansion, though contributing to the city's growth, has come at a high cost. Agricultural land, once vital for local food production and supporting rural livelihoods, was steadily shrinking, which has serious implications for food security. The transformation of these agricultural areas into urban spaces threatened the availability of fresh produce and drives up food prices, disproportionately affecting lower-income households that are already vulnerable to economic shocks. Agricultural land in Addis Ababa has decreased significantly by 8,282 hectares (15.92%) from 2000 to 2020. This reduction is indicative of the conversion of farmland into built-up areas, reflecting the pressures of urban growth on traditional agricultural areas. This finding supported the conclusions made by Kassa et al (2011); Mulugeta et al (2017) and Bula (2020).

Similar trends was observed in other rapidly urbanizing regions. For example, studies in China by Zhang et al (2017) and by Wu et al (2015) and Kumar et al (2011) in India and by Haregeweyn et al (2012) in Bahir-Dar Ethiopia highlighted the loss of agricultural land due to urban growth, underscoring the global challenge of balancing urban expansion with agricultural preservation.

The decline in agricultural land in Addis Ababa also reinforced by findings from other studies that emphasize the conflict between urban development and agricultural land use. The conversion of farmland to urban uses often results in the loss of local food production capabilities and disruptions to agricultural livelihoods, a concern raised in previous researches from various cities like Dhaka by Rahman et al (2018) and Rustiadi et al (2021), and Nagasawa et al (2015) in Jakarta Indonesia.

The reduction in vegetation cover is another concerning aspect of this urban expansion. Vegetation played a crucial role in regulating local temperatures, reducing air pollution, and supporting biodiversity. As green spaces replaced by concrete and asphalt, Addis Ababa has experienced a worsening urban heat island effect, where temperatures in the city are significantly higher than in surrounding rural areas. This has not only made the

city more uncomfortable during hot seasons but has also exacerbated energy consumption as residents rely more on cooling systems. Additionally, the loss of vegetation has led to a reduction in biodiversity, with natural habitats being replaced by built-up areas, further impacting the ecological balance of the surrounding. Similar findings have been documented in other rapidly growing African cities such as Nairobi as stated by Mwangi (2020) and in Lagos as specified by Oyalowo (2022) and Fatai (2021), and in Accra as studied by Yeboah et al (2017) where urbanization has also led to the widespread conversion of agricultural and vegetation lands into urban centers. These cities have experienced similar environmental degradation, including increased temperatures and loss of biodiversity, underscoring the need for sustainable urban planning.

The process of land expropriation was a key mechanism facilitating rapid urban expansion. The study found that the dislocation of farmers has been particularly noticeable in peripheral areas, where land is acquired for housing, infrastructure, and industrial parks. Over 6,431 farming households (more than 35, 000 families) have been displaced in Addis Ababa over the past two decades, with the highest number in Bole sub-city, followed by Nifas-Silk Lafto, Akaki-Kality, Yeka, and Kolfe-Keranyo sub-cities (AACA, 2019). The displaced farmers, many of whom were fully dependent on agriculture, have faced significant socio-economic challenges post-expropriation. As the study highlighted, expropriation led to a 45.5% reduction in income among these farmers, with many transitioning to temporary, low-paying jobs. The lack of adequate compensation and insufficient support for livelihood restoration has left many struggling to adapt to urban life, exacerbating poverty and inequality. This trend is also reflected in other cities undergoing rapid urban growth. In Nairobi, for example, studies have shown that expropriated farmers often receive inadequate compensation and face difficulties transitioning to non-agricultural employment, leading to increased urban poverty.

Urban growth/expansion in Addis Ababa, while addressing the immediate needs for housing and infrastructure, has resulted in long-term socio-economic and environmental costs. As land was continuously expropriated for development projects, there has been growing tension between the city's urban planners, the local government, and displaced communities. Many farmers feel that the expropriation process is inequitable, with

compensation often failing to reflect the true value of the land. Additionally, the loss of agricultural land has forced farmers into urban labor markets, where their skills are often mismatched, leading to unemployment or underemployment. This displacement has had cascading effects on their households, affecting their children's education, health, and overall quality of life.

The reduction of vegetation cover by 4,866.21 hectares (9.35%) further underscored the environmental impact of urban expansion related LULC changes. This trend aligns with studies that have documented the decline of green spaces in growing cities. For instance, research in Brazil by Kühner et al (2021) and Zacharias et al (2015) in Beijing China indicated similar reductions in vegetation due to urban development, emphasizing the loss of ecological functions such as biodiversity support and temperature regulation. The environmental consequences of diminishing vegetation cover are well-documented. Green spaces provided essential ecosystem services, including air quality improvement, temperature moderation, and habitat provision in Accra metropolis as specified by Puplampu & Boafo (2021). The loss of these areas in Addis Ababa, as indicated by the data, is likely contributing to challenges related to urban heat islands and ecological degradation, consistent with findings from other metropolitan areas experienced rapid urban growth.

Environmental sustainability has also been severely compromised. The reduction in agricultural land and vegetation cover has heightened the city's vulnerability to climate-related challenges, such as flooding, heatwaves, and water scarcity. Addis Ababa, once surrounded by a greenbelt of agricultural land, now faces the risk of losing its ecological buffer, making it less resilient to environmental shocks as perilously specified by Kassa et al (2011) and Bula (2020). The shrinking wetlands, although representing a small proportion of the city's land, further threaten biodiversity and disrupted natural water filtration processes, which are essential for maintaining water quality in urban areas.

The findings of the study align with previous research on the impacts of urbanization on land use patterns and livelihoods. For instance; studies by Arsiso et al (2018), Mulugeta et al (2017), and others have similarly noted the expansion of built-up areas at the

expense of agricultural and vegetative land in Addis Ababa. These studies emphasized the environmental consequences of this expansion, including increased temperatures, reduced green spaces, and the degradation of ecosystems. Similarly, Teklemariam and Cochrane (2021) highlighted the socio-economic impacts of land expropriation, particularly the impoverishment of displaced farmers and the inadequate compensation provided by the government.

To address these challenges, there is an urgent need for more sustainable and inclusive urban planning in Addis Ababa. Policymakers must find a balance between accommodating the city's growing population and preserving critical agricultural and natural areas. One potential solution is to promote higher-density development in already urbanized areas, reducing the need for further land expropriation. Additionally, compensation for expropriated land should be fair and accompanied by comprehensive livelihood restoration programs to support displaced farmers in transitioning to new employment opportunities. Urban planners should also prioritize the preservation of green spaces and implement policies that protect the remaining agricultural and vegetative areas around the city. Such measures would not only help to mitigate the environmental impacts of urbanization but would also ensure that the city's growth is more equitable and sustainable in the long term.

4.3.3 Effects of Land Expropriation on Farmer's Livelihoods

a) Loss of Income

The data indicated a significant decline in farmers' income following land expropriation in urban peripheral areas. Before expropriation, it was only 19 respondents (5.4%) earned less than 20,000 EBR annually. However, this proportion increased by 22.7 percentage points, reaching 98 respondents (28.1%) after the expropriation. This increase highlighted the negative economic impact of losing access to agricultural land, which had been a primary source of income for these farmers.

Similarly, the number of farmers earning between 21,000 and 30,000 EBR saw a substantial decrease. Before expropriation, 196 respondents (56.2%) fell within this income bracket. After expropriation, this figure dropped by 29.6 percentage points to 93

respondents (26.6%). This sharp decline suggested that many farmers who once maintained a relatively stable income from agriculture found themselves significantly disadvantaged after losing their land. The income bracket of 31,000 to 40,000 EBR also experienced a decrease, though less pronounced, with a reduction of 4.9 percentage points from 132 respondents (37.8%) to 109 respondents (32.9%). This decline further underscored the widespread economic instability faced by farmers post-expropriation, even among those who were relatively better off before losing their land. The proportion of farmers earning more than 40,000 EBR increased by 13.4 percent, from just 2 respondents (0.6%) before expropriation to 49 respondents (14%) after the expropriation. While this appeared as a positive development, it was likely that this increase reflected a minority of farmers who were able to adapt to the new economic reality, possibly by diversifying their income sources, receiving better compensation, or benefiting from other external factors. This group, however, remained an exception rather than the norm, given the overall trend of declining incomes.

During a focus group discussion with farmers from the "Bole Arabssa" area, participants emphasized the adverse effect of land expropriation on their income. They reported that, “a complete decline in income following the loss of their land, which had previously been their primary, and in many cases, sole source of livelihood. The transition from agricultural activities to alternative income sources proved to be challenging, if not impossible, for many, exacerbating their economic hardships.”

The findings from this study coincided with previous researches conducted in similar contexts. For instance, Le & Nguyen (2020) and Thi et al. (2021) documented comparable trends among farmers in peri-urban areas of developing countries, where land expropriation led to significant income losses for the majority of affected households. These studies highlighted the difficulty farmers face in transitioning to non-agricultural livelihoods, especially when they lack the necessary skills, resources, and support systems to do so. In the context of African countries, studies conducted in Ghana and Nigeria provide further evidence of this trend. Abdulai (2020) found that agricultural land use change in peri-urban Ghana led to a marked reduction in household income, as displaced farmers struggled to find alternative means of earning a living. Similarly,

Oduro (2010) and Otubu (2012) documented the economic challenges faced by expropriated households in Nigeria, where the loss of agricultural land directly translated into a decline in income and overall economic well-being.

The significant income decline observed in this study was indicative of the broader socio-economic challenges associated with land expropriation. The loss of agricultural land not only barred farmers of their primary source of income but also undermined their ability to invest in the future. With limited options for alternative livelihoods, many expropriated farmers find themselves trapped in a cycle of poverty, unable to recover from the economic shock of losing their land. The increase in the proportion of farmers earning more than 40,000 EBR, while notable, should not overshadow the broader trend of income decline. This increase likely reflected a small segment of the population that was either better compensated, more adaptable, or more fortunate in securing new income sources. However, the vast majority of affected farmers experienced a significant reduction in income, highlighting the need for more equitable and effective compensation and resettlement strategies.

Therefore, the results of the study reinforced the findings of previous researches, emphasizing the severe economic consequences of land expropriation especially for farmers in urban peripheral areas. The decline in income observed in this study was consistent with trends documented in other developing countries like in Vietnam (Nguyen et al., 2016), Nigeria (Muhammed & Emigilati, 2019), and Tanzania (Sullivan et al., 2022), where the loss of agricultural land has led to widespread economic losses. To mitigate these impacts, it is essential to implement more comprehensive compensation and support mechanisms that help displaced farmers transition to new livelihoods and rebuild their economic stability. Without such measures, the socio-economic fallout from land expropriation is likely to continue, exacerbating poverty and inequality in affected communities.

b) Loss of Employment

The data presented in (see Table 4.2) reveals a significant shift in the employment status of farmers following land expropriation. Before the expropriation, an overwhelming majority 99% of the respondents were fully engaged in agriculture and related activities, reflecting the deep reliance on land-based livelihoods in these communities. Only 1% of the respondents were unemployed, highlighting the near-universal engagement in agricultural work among these farmers.

However, following land expropriation, there was a notable and concerning shift in the employment status of the respondents. The proportion of unemployed farmers rose sharply by 33%, a significant increase that underscores the destabilizing effect of losing agricultural land. This increase in unemployment indicates that many farmers were unable to transition into other forms of employment after the expropriation, leaving them without a means to sustain their livelihoods.

Additionally, 42.4% of the respondents shifted into temporary jobs, often characterized by low wages and job insecurity. These jobs typically do not offer the same level of financial stability as traditional agricultural activities, further exacerbating the economic vulnerability of the displaced farmers. The shift to temporary employment reflects the limited opportunities available to these farmers in the aftermath of expropriation, as they struggle to adapt to an urbanized environment where their agricultural skills are less valued.

About 24.6% of the respondents who had better educational backgrounds were able to secure permanent employment and earn a higher income compared to their previous situation. This finding highlights the critical role that education plays in determining the ability of displaced farmers to adapt to new economic realities. Those with higher education levels were better positioned to take advantage of the opportunities available in the new urban setting, allowing them to achieve a degree of economic resilience. Because of expropriation, a farmer who was formerly engaged in agriculture explained that;

"…when I completely lost my land, I lost my employment too. Subsequently, I taught myself to work as a daily laborer, driven by the need to secure any available work that provides income to sustain my family. But still, it is insufficient to meet even the basic needs of my family. What worsens the challenge to me is that I have no formal education and any skill, which hinders me not to compete for employment opportunities in the new urban setting that emerged post-expropriation……." (Interviewed on March 10, 2021, in Nifas Silk Lafto Sub-city around Gelan condominium, Addis Ababa).

The interview response clearly highlighted the broader challenges associated with land expropriation. The loss of agricultural land not only removes the primary source of income but also disrupted the established social and economic fabric of these communities. Without adequate support, many farmers found themselves ill-equipped to navigate the new urban landscape, leading to increased unemployment, underemployment, and economic hardship.

The findings from this study are consistent with previous findings of Tuan (2021) and Xie (2019) in Vietnam, which also emphasized the significant impact of land expropriation on the employment status of peri-urban farmers. Tuan (2021) documented how land expropriation in Vietnam led to a substantial decline in traditional agricultural employment, with many farmers unable to find comparable work in the new urban context. Similarly, Xie (2019) highlighted the difficulties faced by farmers in transitioning to non-agricultural jobs, with many ending up in low-paying, insecure employment or remaining unemployed.

These studies underlined the notion that land expropriation in peri-urban areas often leads to a profound disruption in livelihoods, particularly for those who lack the education and skills needed to compete in an urbanized economy. The shift from stable agricultural work to temporary or insecure jobs is a common theme, reflecting the broader challenges of economic adaptation faced by expropriated farmers.

The results of this study, when viewed in conjunction with the findings of Nguyen et al (2016) in Vietnam, emphasized on the importance of providing adequate support to farmers displaced by land expropriation. The sharp increase in unemployment and the

shift to low-paying temporary jobs highlighted the inadequacy of current resettlement and compensation strategies in ensuring the economic stability of displaced farmers.

Education emerges as a key factor in determining the ability of farmers to adapt to new employment opportunities. Those with better education were more successful in securing permanent, higher-paying jobs, suggesting that investment in education and skills training could be crucial in helping expropriated farmers transition to new livelihoods. Without such support, the negative economic consequences of land expropriation are likely to persist, contributing to increased poverty and social inequality in affected communities.

Overall, the findings of the study were found consistent with previous researches, highlighting the significant and often adverse effect of land expropriation on the employment status of peri-urban farmers. The shift from stable agricultural employment to unemployment or temporary, low-paying jobs underscores the challenges faced by displaced farmers in adapting to new urban life. To mitigate these impacts, it is essential to implement comprehensive support programs that include education, skills training, and employment assistance, ensuring that expropriated farmers can rebuild their livelihoods in the aftermath of land loss.

c) Loss of Crop Production and Food Security

Land expropriation often leads to food self-insufficiency, as farmers who lose their land become reliant on food aid or imports. This dependence can escalate into food insecurity and malnutrition, particularly in regions where food production is already limited. A 2017 United Nations study confirmed that, land expropriation not only disrupts immediate food production but also contributes to the erosion of traditional agricultural knowledge and practices, which are vital for the long-term sustainability of food systems. Similarly, research by Mabe et al. (2019) found that when farmers lose their land, they often lack access to the necessary resources and inputs required for crop production or livestock rearing. This reduction in agricultural productivity directly impacts food production, further exacerbating the issue of food insufficiency.

During an interview on March 8, 2021, an expropriated farmer shared his personal experience of life before and after losing his land;

"...In the past, I was deeply involved in cultivating crops, raising animals, and growing fruits and vegetables; a livelihood that provided a substantial income for my family. However, the expropriation took away my once-thriving source of sustenance. The impact has been severe; I now struggle to provide even basic necessities for my family and can no longer generate any income. The loss of my productive land has plunged me into a state of food insufficiency, a stark contrast to the comfort I once enjoyed. Today, I am entirely dependent on a monthly allowance from the government for survival. Unfortunately, this allowance is far from sufficient to cover my family's essential expenses, pushing me into a critical state of poverty."

This personal account underscored the devastating impact of land expropriation on an individual's livelihood, highlighting the severe challenges faced by those struggling with the aftermath of losing their land.

d) Livelihood Change and Dissatisfaction

The findings of this study offered valuable insights into the complex and often adverse effects of land expropriation on farmers' livelihoods. In this particular study, the data revealed that for a considerable portion of the expropriated farmers, 40.7% of their livelihoods have worsened following expropriation. This decline is likely due to the loss of land, which was their primary source of income and sustenance. When farmers are forcibly displaced from their land, they lose not only their homes and means of agricultural production but also the stability and security that came with their traditional way of life. This disruption can lead to severe economic and social consequences, pushing many into poverty. The sense of displacement and loss is compounded by the lack of adequate compensation or alternative opportunities, leaving many farmers in a more vulnerable position than before.

Furthermore, 29.8% of the respondents reported that their livelihood conditions remained unchanged after expropriation. This suggests that for nearly a third of the expropriated

farmers, the transition did not lead to immediate economic decline, but neither did it offer any improvement. These individuals may have managed to maintain their previous living standards by finding alternative employment or through the compensation received, but they likely did not experience the same level of security or fulfillment as they did when they were engaged in agriculture. The lack of improvement in their livelihoods indicates stagnation, where their new circumstances neither provide growth nor recovery from the disruption caused by expropriation.

On the other hand, about 29.5% of the respondents recognized an improvement in their livelihoods post-expropriation. This group consists primarily of those who had a higher level of education and knowledge, which enabled them to secure better employment opportunities or start personal businesses. These individuals were able to leverage the expropriation as an opportunity to transition into more lucrative or stable economic activities, demonstrating that with the right resources and opportunities, some farmers can improve their livelihoods even after losing their land. This finding underscores the importance of education, skills training, and access to resources in mitigating the negative impacts of land expropriation.

However, the broader implications of these findings align with studies by Oduro (2010), Feldman and Geisler (2012), Le and Nguyen (2020), and Odusola (2020), which have linked land expropriation to increased poverty rates in various countries, including Ethiopia, Mozambique, and Zimbabwe. These studies highlighed the systemic issues associated with land expropriation, where the loss of land often leads to the impoverishment of those who are already vulnerable. FAO (2009b) and Worku (2020) demonstrated that, expropriation can lead to significant changes in livelihoods, which can be either positive or negative, depending on the socio-economic conditions of the affected individuals and the opportunities available to them post-expropriation. The data from this study further validated the notion that without adequate support, expropriation can exacerbate poverty and inequality, particularly among communities that are heavily dependent on agriculture. This is also supported by the IRR model and the World Bank's OP 4.12.

Overall, the results of this study on livelihood change and dissatisfaction among expropriated farmers reflected the profound and often negative impacts of land expropriation. While a small proportion of farmers may experience improved livelihoods due to better education and opportunities, the majority face either deterioration or stagnation in their living conditions. This underscored the need for comprehensive support mechanisms, including fair compensation, skills training, and access to alternative livelihoods, to ensure that expropriated individuals can rebuild their lives and avoid falling into poverty.

During the focus group discussion, expropriated farmers expressed their dissatisfaction with the compensation they received, stating that it was not as per their expectations and did not accurately reflect the true value of their land and lost assets. This issue stems from inconsistencies between the assessed value of the expropriated land and the compensation provided, leaving the farmers feeling financially disadvantaged. The compensation was often calculated based on the estimated crop value over a fixed period, which failed to capture the long-term potential and inherent value of the land.

Additionally, how compensation was disbursed further contributed to the farmers' dissatisfaction. Delays in payment and a lack of transparency during the compensation valuation process led to significant dissatisfaction. These delays not only heightened the sense of injustice but also hindered the farmers' ability to transition smoothly into alternative livelihoods, exacerbating their financial and emotional stress.

e) Loss of Landholding Rights and Displacement

During the group discussion, participants highlighted the profound impact that land expropriation had on their shelter and landholding rights. They lost their homes and were displaced, leading to a significant disruption in their lives. The expropriation resulted in the loss of their property rights, sparking serious legal disputes. These issues were not only due to inadequate compensation but also because the expropriation process was carried out without proper consultation or consent, exacerbating their sense of injustice.

Studies by Patel & Mandhyan (2014) and Shaw & Saharan (2019) similarly concluded that land expropriation has detrimental effects on individuals and communities, including displacement, loss of livelihoods, destruction of social networks, insufficient compensation, and restricted access to resources. These negative impacts often lead to increased poverty, underscoring the need to carefully evaluate land expropriation policies and ensure that affected communities receive adequate compensation and support to find alternative sources of income and livelihoods.

Overall, this study demonstrates that land expropriation around the city has significantly harmed the socio-economic conditions of farmers. It has left them landless, jobless, and disintegrated, and has disrupted their livelihoods and social ties. The city administration provided a lump-sum monetary compensation for their lost land, crops, and other assets; however, this compensation is insufficient to restore their livelihoods to previous levels or better conditions.

As a result, most farmers are dissatisfied with both the amount and form of compensation provided, as well as their post-expropriation living conditions. Older farmers, in particular, continue to require direct government support in the form of allowances and subsidies to sustain their lives, while younger farmers are calling on the government to create job opportunities for them.

4.3.4 Discussion of Resettlement and Livelihood Supports

The study on the Structural Equation Model (SEM) and Hypothesis Testing, focusing on the mediating role of farmers perceived economic benefits, provides significant insights into the dynamics of livelihood restoration among displaced farmers. The results highlight the direct, indirect, and total effects of various factors influencing the economic outcomes for farmers, particularly in the context of development-induced displacement. The multi-group analysis further reveals how educational levels among farmers play a crucial role in shaping their perceptions and the subsequent economic benefits they experience. These findings align with broader discussions in the literature on the need for comprehensive strategies to ensure that economically displaced individuals not only restore but potentially enhance their livelihoods.

Livelihood restoration for displaced persons is grounded in international instruments such as the Guiding Principles on Internal Displacement, which emphasize the prohibition of arbitrary displacement unless justified by compelling public interest (Van der Ploeg & Vanclay, 2017). This principle is further supported by the International Covenant on Economic, Social and Cultural Rights (1966) (Pinto, 2022), which asserts the right of all people to self-determination and economic security. Despite these strong international frameworks, some scholars argue that current lender requirements, such as those outlined by the International Finance Corporation (IFC), fall short of fully addressing these human rights obligations. Van Der Ploeg and Vanclay (2017) critique the IFC's Guidance Note 5 for merely encouraging livelihood restoration rather than mandating it as a minimum standard, thereby leaving room for inadequate implementation in practice.

The findings from the Structural Equation Model (SEM) and Hypothesis Testing regarding the compensation and livelihood restoration of displaced farmers shed light on the critical role of perceived economic benefits in shaping outcomes for these individuals. The study's results indicated that while compensation, particularly in the form of cash payments, might seem beneficial at first glance, its long-term effectiveness in restoring or enhancing livelihoods is questionable. This aligned with the literature, which consistently critiques the reliance on cash compensation as a standalone measure for livelihood restoration. As Cernea (2008) argued, compensation should not be viewed as a net benefit but rather as restitution for what has been taken away, underscoring the necessity of direct investment in sustainable livelihood strategies instead.

The study also highlighted that the perceived economic benefits, as a mediating factor, significantly influence the effectiveness of compensation. This finding resonates with Rowan's (2017) observation that cash compensation, while easier to administer and often preferred by stakeholders, frequently fails to address the deeper needs of displaced populations. Cash is tangible and immediate, which explains its appeal to relocated households (Diaho & Molapo, 2012; Mariotti, 2014). However, as the study suggested, the direct effect of cash compensation is often limited to short-term financial relief, which does not translate into long-term livelihood stability. This is particularly evident in the

multi-group analysis, where farmers with varying levels of education perceived the economic benefits of compensation differently. Those with higher education levels were more likely to recognize the inadequacy of cash compensation in ensuring sustainable livelihoods, while less educated farmers might initially view cash as a viable solution, only to face long-term economic challenges later on.

Moreover, the study's results pointed to the indirect effects of compensation, where the lack of adequate financial planning and support systems leads to the depletion of resources and a return to poverty. This is consistent with the findings of Gamaathige (2014), who noted that administrative delays and challenges in implementing income restoration programs further complicate the effectiveness of compensation. The literature underscores that compensation needs to be timely and based on sound valuation methodologies, yet field experiences show that delays and insufficient compensation are common issues (World Bank, 2016). The study's findings reinforced the notion that without proper support structures, such as agricultural extension services or microinsurance, compensation alone is insufficient to restore livelihoods.

The preference for cash compensation also reflected a distrust in the system responsible for ongoing livelihood restoration support. Esteves (2021) highlighted that displaced people often prefer cash due to fears that promised support may not materialize, a concern echoed in the study's findings where farmers expressed scepticism about the long-term viability of non-cash-based compensation strategies. This distrust was a significant barrier to the success of alternative livelihood restoration measures, as it undermines the potential benefits of more sustainable approaches, such as land-for-land compensation or in-kind agricultural support (Reddy et al., 2015).

The structural challenges inherent in the administration of compensation programs are also evident in the study's results, particularly in the analysis of delayed compensation and its impact on economic outcomes. The Karnataka Irrigation Project serves as a pertinent example, where under compensation and delays led to severe inadequacies in livelihood restoration. The study reflects similar issues, where delayed compensation payments exacerbated the financial difficulties of displaced farmers, eroding the potential

benefits of compensation through inflation and other economic pressures. The inadequacy of compensation, both in terms of amount and timing, is a recurring theme in the literature and is corroborated by the study's findings.

Access to resources and services, particularly in the context of land tenure, agricultural land, basic services, and infrastructure, plays a crucial role in the livelihood restoration of relocated farmers. The findings from the Structural Equation Model (SEM) and hypothesis testing indicate that access to these resources significantly impacts farmer's perceived economic benefits. This result is consistent with the World Bank's policy, which emphasizes land-based strategies for households losing land-based livelihoods. The policy stresses that re-settlers should be provided with land offering a combination of productive potential and locational advantages that are at least equivalent to the land taken (World Bank, 2004).

The study's results demonstrated that when farmers are provided with land that maintains or enhances their productive potential, along with adequate infrastructure, their perceived economic benefits improve significantly. This aligns with the literature that suggested replacement land, when coupled with appropriate infrastructure and basic services, supports the effective restoration of livelihoods (World Bank, 2004). The indirect effects observed in the SEM further highlight the importance of access to basic services such as water, electricity, and transportation in enhancing the economic well-being of relocated farmers.

Furthermore, the study's multi-group analysis revealed that farmers with higher levels of education are better equipped to utilize available resources and services, leading to more favourable economic outcomes. This is in line with the World Bank's operational policy, which underscores the need for comprehensive rehabilitation measures, including the provision of infrastructure and services tailored to the needs of the displaced population (World Bank, 2004). These services enable farmers to effectively use the land and resources provided, thereby improving their economic stability.

The timing of access to these resources was also critical. The study showed that farmers who receive timely access to land and services report higher perceived economic

benefits. This finding supports the World Bank's policy that compensation for lost land and assets should be paid before the client takes possession of the land or assets, ensuring that re-settlers can begin restoring their livelihoods without undue delay (World Bank, 2004). Timely access to resources and services allows farmers to resume agricultural activities promptly, which is essential for maintaining their economic stability and restoring their livelihoods effectively.

The discussion on employment and job creation for relocated farmers highlighted the critical role these factors play in the successful restoration of livelihoods post-resettlement. The study's Structural Equation Model (SEM) and hypothesis testing underscored the importance of employment opportunities and job creation in enhancing farmers perceived economic benefits. This aligns with the literature, particularly Fujita (2013) emphasis on income restoration as a key component of resettlement, especially when affected individuals lose their productive base, businesses, or jobs. The direct effects observed in the SEM suggest that access to employment and job creation directly influences the economic stability of relocated farmers. This finding is supported by the World Bank's OP 4.12, which advocates for development assistance, including job opportunities, as a supplement to compensation measures (World Bank, 2004). The preference for land-based resettlement strategies is noted, yet the flexibility of the policy to incorporate non-land-based options, such as employment and self-employment opportunities, is particularly relevant when sufficient land is unavailable or when land-based solutions are impractical.

The mediating role of farmers perceived economic benefits in the relationship between employment opportunities and overall livelihood restoration further reinforces the importance of job creation. This aligns with the literature that highlights how development assistance, including job training and opportunities, can significantly impact the success of resettlement programs (World Bank, 2004). When farmers perceive that employment opportunities are available and accessible, their confidence in their ability to restore their livelihoods increases, leading to better economic outcomes. Additionally, the multi-group analysis of farmers with varying levels of education reveals that those with higher education levels are better able to capitalize on employment opportunities and job

creation initiatives. This finding is consistent with the World Bank's recognition that, in cases where land-based options are not feasible, non-land-based solutions should focus on providing employment or self-employment opportunities (World Bank, 2004). The analysis suggests that education plays a crucial role in enabling farmers to adapt to new employment opportunities, thereby facilitating more effective livelihood restoration.

The indirect effects observed in the study further emphasize the importance of integrating job creation into resettlement programs. For instance, when employment opportunities are coupled with adequate training and development assistance, relocated farmers are better positioned to sustain their livelihoods in the long term. This approach is in line with Fujita (2013) assertion that income restoration should not only be immediate but also sustainable, ensuring that affected individuals can maintain their livelihoods over time. Moreover, the timing of job creation initiatives is crucial. The study indicated that when employment opportunities are made available early in the resettlement process, farmers are more likely to experience positive economic outcomes. This finding resonates with the World Bank's policy that emphasizes the importance of providing development assistance, including job opportunities, as part of the initial resettlement package (World Bank, 2004). Early access to employment helps mitigate the economic shocks associated with displacement and provides a foundation for long-term livelihood restoration.

The discussion on social and community networks for relocated farmers highlighted the profound impact of displacement on social cohesion and the restoration of livelihoods. The study's Structural Equation Model (SEM) and hypothesis testing reveal that social and community networks play a crucial role in influencing farmers perceived economic benefits. This finding is consistent with the literature, which emphasizes the importance of social networks in maintaining the well-being and resilience of displaced populations (Cernea, 1997; Marsh et al, 2013). The direct effects observed in the SEM indicate that the disruption of social and community networks significantly affects the economic and psychological well-being of relocated farmers. The loss of established social organizations and networks, as described by the World Bank (2004), often leads to social disarticulation, where communities become dispersed and fragmented, and kinship groups are scattered (Cernea, 1997). This social disarticulation compounds the loss of

other forms of capital, such as natural, physical, and human capital, making it more challenging for displaced individuals to rebuild their livelihoods.

The mediating role of farmers perceived economic benefits in the relationship between social networks and livelihood restoration underscored the importance of these networks in the resettlement process. The literature supports this, noting that the loss of social capital can exacerbate the challenges faced by displaced communities, as social networks are vital for emotional support, resource sharing, and collective action (Esteves, 2021). When social networks are disrupted, displaced individuals may experience a decline in their willingness and capacity to participate in livelihood restoration programs, as the emotional impact of displacement can hinder their engagement in upskilling opportunities (Esteves, 2021). Moreover, the multi-group analysis of farmers with varying levels of education highlighted the differential impact of social network disruption across different educational groups. Farmers with higher levels of education may have better access to alternative social networks or may be more resilient in rebuilding their social connections post-displacement. However, for those with lower levels of education, the loss of social networks can have a more pronounced negative effect on their ability to restore their livelihoods. This finding is consistent with the argument that social connectedness is a key component of social cohesion, which is often underappreciated in resettlement programs (Marsh et al., 2013).

The indirect effects observed in the study further emphasized the need to prioritize the restoration of social and community networks in resettlement planning. While international standards, such as those set by the World Bank, recognize the importance of restoring social capital, the practical challenges of achieving this goal are significant (Esteves, 2021). The lack of well-established measures for social capital restoration complicated efforts to maintain community networks, leading to long-term difficulties in achieving sustainable livelihood restoration. The literature also highlighted the psychological disturbances experienced by displaced individuals, which can lead to pessimism about their future and a sense of hopelessness regarding their livelihoods (World Bank, 2004). This psychological impact can further weaken social cohesion, as individuals become less likely to engage in community activities or support each other in

rebuilding their lives. Therefore, addressing the psychological and emotional aspects of displacement is essential for fostering social connectedness and community resilience.

The discussion on Development Assistance for relocated farmers must consider the complexities revealed in the study's Structural Equation Model (SEM), hypothesis testing, and multi-group analysis, as well as insights from the literature. The study indicated that development assistance, particularly in the form of training, equipment, and credit, has a varied impact on the economic benefits perceived by farmers, depending on their educational level and their ability to adapt to new livelihood practices. This aligns with the literature's critique of the simplistic assumptions underlying many development programs, which often underestimate the challenges involved in transitioning from traditional subsistence livelihoods to market-based systems.

The SEM results showed that while development assistance has direct positive effects on the perceived economic benefits, these effects are often mediated by the farmers' ability to adapt to new agricultural practices or alternative livelihoods. This finding is consistent with the literature's emphasis on the deep-rooted nature of subsistence agricultural practices, which have been part of farmers' oral traditions for centuries. Asking farmers to completely change their way of thinking and adopt new practices, such as transitioning from rain-fed to irrigated agriculture, poses significant challenges (Esteves, 2021). The direct effects of development assistance are thus not uniformly positive, as the success of such interventions depends heavily on farmers' willingness and ability to embrace these new practices.

The multi-group analysis further revealed that farmers with different levels of education respond differently to development assistance. Those with higher education levels may find it easier to navigate the complexities of a market-based livelihood system, understanding the intricacies of transactions and market interactions better than those with less education. However, for farmers with lower levels of education, the transition is more challenging, and the perceived benefits of development assistance may be lower. This is reflected in the literature, which highlights the difficulties of asking people who have relied on subsistence agriculture for generations to suddenly shift to a market-

oriented approach. The entire mindset, interactions, and transactions in a market system differ significantly from what these farmers have traditionally known, making the transition a daunting task (Esteves, 2021).

The indirect effects observed in the SEM also suggested that development assistance alone is not sufficient to ensure successful livelihood restoration. The literature supports this by pointing out that programs designed solely around providing training, equipment, and credit often fail to achieve their intended outcomes because they do not address the deeper, systemic changes required for farmers to successfully transition to new livelihoods. For instance, when farmers are expected to move from rain-fed to irrigated agriculture, they are not only dealing with less land but also with a completely different agricultural system that requires new knowledge, skills, and sometimes even a shift in cultural practices.

The literature criticized the often-superficial recommendations of "alternative livelihoods," which do not fully account for the significant cognitive, social, and economic adjustments that such a transition entails. Moreover, the study's findings on the mediating role of farmers perceived economic benefits highlighted the importance of tailoring development assistance to the specific needs and circumstances of the affected population. Generic programs that assume all farmers will benefit equally from the same type of assistance are unlikely to succeed. Instead, development assistance should be designed with a nuanced understanding of the local context, taking into account factors such as the farmers' previous experience, educational background, and cultural attachment to traditional agricultural practices.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter concludes the study by summarizing its key objectives: the analysis of legal and policy frameworks for land expropriation in Addis Ababa, Ethiopia, the analysis of urbanization dynamics and land use land cover changes, the examination of the socio-economic effects on expropriated farmers, and the evaluation of resettlement and livelihood support mechanisms. The findings revealed that rapid urban expansion has drastically altered land use, leading to significant socio-economic challenges for displaced farmers, and underscored the need for stronger legal protections and more effective resettlement strategies.

5.2 Conclusions

5.2.1 Legal and Policy Frameworks of Land Expropriation

Ethiopia's legal and policy frameworks for land expropriation, rooted in the 1960 Civil Code and the FDRE 1995 Constitution, provided a structured approach to managing expropriation, compensation, and resettlement. Over time, proclamations such as No. 455/2005, No. 721/2011, and No. 1161/2019 were introduced to address urbanization challenges and improve compensation mechanisms. Proclamation No. 1161/2019 strengthened resettlement support by incorporating the replacement cost principle and development project shares.

Despite these improvements, challenges remained. The vague definition of "public purpose" allowed broad interpretation, and compensation mechanisms did not fully address the socio-economic impact on displaced landholders. Implementation inconsistencies, particularly in Addis Ababa with Directive No. 79/2021, highlighted gaps between policy and practice.

Overall, Ethiopia's expropriation laws advanced national development goals while protecting landholders' rights. However, effective implementation and further legal reforms were necessary to ensure fair compensation and sustainable livelihood restoration for displaced individuals.

5.2.2 Dynamics of Urbanization, LULC Change, and Land Expropriation

The study examined urbanization, land use, and land cover changes in Addis Ababa, revealing significant transformations over the past two decades. Between 2000 and 2020, the city's built-up area expanded by 25.28%, particularly in Bole, Nifas-Silk, Akaki-Kality, Yeka, and Kolfe-Keraniyo, driving rapid urban sprawl. In contrast, agricultural land declined by 15.92%, and vegetation cover decreased by 9.35%, impacting food security, environmental sustainability, and biodiversity.

Urban expansion led to widespread land expropriation, severely affecting farmers in peripheral areas who lost their primary sources of income and employment, leaving them vulnerable. Population growth and economic development fueled this transformation, increasing demand for housing, infrastructure, and services, often at the expense of local livelihoods.

The study emphasized the need for a balanced urban development approach, considering social, economic, and environmental impacts. Policymakers were urged to ensure that urban expansion remained sustainable and equitable, particularly for those most affected by land expropriation.

5.2.3 Effects of land expropriation on the livelihoods of expropriated farmers

The study examined the socio-economic effects of land expropriation on farmers in Addis Ababa's rapidly urbanizing peripheries, particularly in four selected sub-cities. As the city administration sought to meet the growing demand for land, expropriation became a primary tool for land acquisition. However, this process severely impacted affected farmers by depriving them of their primary source of income, reducing employment opportunities, and increasing poverty and food insecurity.

The study also highlighted procedural shortcomings in the expropriation process, particularly the lack of transparency and limited community involvement, which led to distrust and a sense of injustice. Compensation mechanisms were found to be inadequate, failing to reflect the true value of lost land and assets. Additionally, the absence of effective resettlement and livelihood restoration support made it difficult for displaced farmers to transition to alternative employment.

To address these challenges, the study recommended greater transparency, fair and timely compensation reforms, and stronger legal frameworks to protect affected farmers. It also emphasized the importance of alternative livelihood programs and sustainable development practices to balance urban expansion with agricultural preservation. By implementing these measures, urban development could be made more equitable, just, and sustainable for all stakeholders involved.

5.2.4 Resettlement and Livelihood Restoration Supports

The study's analysis of the Structural Equation Model (SEM) and Hypothesis Testing provided insights into the complex factors affecting livelihood restoration for farmers displaced by expropriation for development projects. The findings revealed that perceived economic benefits played a crucial role in mediating the relationship between compensation, resource access, employment opportunities, and social networks, ultimately influencing the success or failure of livelihood restoration efforts. While cash compensation offered immediate financial relief, it often lacked sustainability due to delays in disbursement and insufficient support structures. The study confirmed that cash compensation alone was inadequate and needed to be integrated with land-based compensation, timely resource access, and support systems to ensure long-term livelihood stability.

Educational attainment significantly influenced farmers' ability to utilize compensation effectively. Farmers with higher education levels were better positioned to recognize the shortcomings of cash compensation and seek sustainable opportunities. This highlighted the need for tailored livelihood restoration programs that addressed educational disparities among displaced populations.

The study also emphasized the importance of social and community networks, as their disruption posed significant challenges to rebuilding livelihoods. The loss of social capital weakened both economic resilience and community support systems, reinforcing the need for strategies that preserved and restored these networks. Additionally, early access to employment opportunities played a critical role in improving economic stability, aligning with existing research advocating for job creation within resettlement programs to provide both immediate and long-term income sources.

5.3 Recommendations

The study on legal and policy frameworks governing land expropriation, Land Use and Land Cover changes, socio-economic impacts on farmers, and resettlement and livelihood restoration in Addis Ababa identified several challenges. These included the expansion of built-up areas at the expense of agricultural land, inadequate compensation mechanisms, and insufficient livelihood restoration support for displaced farmers. Despite improvements in Ethiopia's legal provisions, gaps remained in implementation, fairness, and sustainability of resettlement programs.

Rapid urbanization and land use changes over the past two decades significantly reshaped Addis Ababa, reflecting economic growth and population expansion but also causing loss of agricultural land, vegetation, and natural ecosystems. These changes raised concerns about food security, environmental sustainability, and the livelihoods of displaced communities. The study recommended several key measures to improve land expropriation practices in Addis Ababa City.

- It emphasized the need to refine the definition of "public purpose" to prevent misuse and ensure expropriation served genuine development needs.
- Continuous legal reforms were necessary to align Ethiopia's frameworks with international standards, such as the World Bank's OP/BP 4.12 on involuntary resettlement, to minimize displacement and promote sustainable solutions.
- Strengthening compensation mechanisms was crucial, as existing formulas failed to fully address socio-economic impacts.
- The study suggested revising compensation rates to consider lost income, social networks, and long-term land value, while ensuring adjustments for inflation. It also called for an independent and transparent valuation process led by impartial experts familiar with local conditions.
- Greater public participation and transparency were needed in land expropriation processes. The study recommended early consultation with affected communities, public disclosure of land acquisition plans, and accessible grievance mechanisms to build trust and reduce conflicts.

- A comprehensive compensation package combining cash and land-based compensation was advised to provide both immediate relief and long-term livelihood security.
- The study also stressed the importance of sustainable land use planning and zoning to balance urban expansion with environmental conservation. Encouraging mixed-use development and supporting peri-urban agriculture could help reduce pressure on farmland while ensuring food security.
- To track urban growth, the study recommended establishing a robust land use monitoring system using GIS and remote sensing technologies. Additionally, livelihood diversification programs were necessary to help displaced farmers transition into non-agricultural jobs, such as construction, services, and small-scale businesses.
- Recognizing the educational disparities among displaced farmers, the study called for vocational training programs aligned with market demands to enhance employability. Finally, enhanced resettlement support was crucial, ensuring fair and adequate compensation, land replacement, and sustainable livelihood assistance. Increased transparency and community engagement through public consultations and participatory planning were essential in building trust and minimizing conflicts during expropriation and resettlement.

By implementing these recommendations, the city administration, policymakers could promote fairer, more sustainable, and socially equitable land expropriation practices.’’

5.4 Areas for Further Research

Based on the findings of the legal and policy review, Land Use and Land Cover (LULC) change dynamics, socio-economic effects of land expropriation on farmers' livelihoods, and the evaluation of resettlement and livelihood restoration supports, several key areas for future research have emerged:

Long-term Impact of Land Expropriation:

- Assess the sustainability of displaced farmers' transition from agriculture to urban occupations.

Effectiveness of Resettlement and Livelihood Restoration Programs:

- Evaluate the adequacy of compensation and support mechanisms for displaced farmers.

Socio-economic Inequalities in Land Expropriation:

- Investigate disparities in compensation and access to restoration programs among different demographic groups.
- Analyze the impact of expropriation policies on vulnerable populations.

Impact of Legal Reforms on Expropriation Practices:

- Assess the effects of Proclamation No. 1161/2019 on compensation frameworks and land expropriation processes.
- Examine whether recent reforms have improved fairness and transparency in expropriation.

Role of Public Participation and Governance in Expropriation:

- Investigate how public involvement influences transparency and accountability in expropriation decisions.
- Recommend governance mechanisms to improve stakeholder engagement in land management.

These research areas would not only advance academic knowledge but also inform policy and practice, supporting more equitable and sustainable urban development in Ethiopia and other rapidly urbanizing regions.

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ANNEXES/APPENDEXES

ANNEX-1: SURVEY QUESTIONNAIRE FOR EXPROPRIATED FARMERS

Dear Participant,

My name is Yeshitla Agonafir, and I am currently pursuing my Ph.D. at Addis Ababa University. I am conducting research for my dissertation, which focuses on **"The Effects of Land Expropriation for Development on Displaced Farmers in Addis Ababa, Ethiopia."** The main objective of this study is to assess how government-initiated land expropriation has affected farmers' livelihoods and to evaluate the resettlement strategies employed to restore those livelihoods.

This questionnaire is a vital part of my research, designed to gather reliable information directly from farmers like yourself who have experienced land expropriation. Your responses will help me better understand the challenges you have faced, as well as the effectiveness of the compensation and resettlement mechanisms provided. By contributing your insights, you will be playing an essential role in shaping recommendations that could lead to improvements in future land expropriation practices and policies.

Please be assured that all the information you provide will be treated with the utmost confidentiality and will be used solely for academic purposes. The data will not be shared with any third parties, and your personal identity will remain anonymous throughout the research process.

I highly appreciate your time and willingness to participate in this study. Your honest and thoughtful responses are crucial to the success of this research, and I sincerely thank you in advance for your valuable cooperation.

If you have any questions or need further clarification regarding the questionnaire or the study, please feel free to reach out to me.

With gratitude,

Yeshitla Agonafir
Ph.D. Candidate
Addis Ababa University

Part I: Demographic Characteristics of Respondents

1. **Gender:** 1) = Male 2) = Female
2. Age of the Respondent in Years? _____

   1) = ≤ 30 Years 2) = 31-40 Years 3) = 41-50 Years

   4) = 51-60 Years 5) = ≥ 61 Years
3. Marital Status:

   1) = Single 2) = Married 3) = Divorced 4) = Widowed
4. Family Size in number _____

   1) = 1-2 2) = 3-5 3) = 6-8 4) = > 8
5. Level of Education:

   1) = Not attended School 2) = Read & Write 3) = Primary 1-8 Grade

   4) = Secondary 9-10/12 Grade 5) = Certificate 6) = Diploma & above

Part II: Questions Related to the Process of Expropriation

6. When was your land expropriated? _____
7. Do you remember for what purpose was your land expropriated? _____
8. Do you agree that the government has made sufficient prior consultation with you before the expropriation?

   1 = Strongly Agree 2 = Agree 3 = Unknown 4 = Disagree 5 = Strongly Disagree
9. How would you assess the level of participation during the expropriation process?

   1 = Very high 2= High 3 = Somewhat 4 = Low 5= Very Low
10. How transparent was the process of the land expropriation?

    1 = Highly transparent **2 =** Transparent **3 =** Somewhat

    4 = Non transparent 5 = Highly non-transparent
11. Did you complain or appeal during the expropriation process? 1 = "Yes" 2 = "No"
12. If "Yes" for #24, what was the reason for your appeal"

    1 = Against the purpose

    2 = Against the procedure

    3 = Against the compensation

    4 = Against the procedure & amounts of compensation

    5 = Other; _____
13. If "No" for #24, why you did not appeal/complain? _____

II. Questions Related to the Valuation Process for Compensation

14. Do you agree that the valuation was conducted as per the legal procedures?

1 = Strongly Agree **2** = Agree **3** = Unknown **4** = Disagree **5** = Strongly Disagree

15. How participatory was the valuation process?

1 = Highly Participatory 2 = Participatory 3 = Somewhat Participatory

4 = non-participatory 5 = Highly non-participatory

16. To what extent was the valuation process transparent?

1 = Highly transparent **2 =** Transparent **3 =** Somewhat

4 = Non transparent 5 = Highly non-transparent

17. Do you agree that all of your lost assets were considered during the valuation process?

1 = Strongly Agree 2 = Agree 3 = Neither agree nor disagree

4 = Disagree 5 = Strongly Disagree

18. To what extent did you participate when the valuers measured and counted your assets?

1 = Fully Participated 2 = Partially Participated 3 = Not participated at all

19. What gaps did you observe during the valuation process?

_____

_____

Part III: Questions Regarding Compensation for Expropriation

20. Did the government provide compensation to you? 1 = "Yes" 2 = "No"

21. If "Yes" for #20, what was the form of Compensation?

1 = Cash Payment

2 = Replacement Residential Land

3 = Both in cash & replacement residential land

4 = Other, please specify _____

22. Regarding compensation, what was your preference?

_____

23. What amount of cash compensation did you receive in Birr? _____

24. If you receive replacement land, what is the size of the replacement residential land in square meters or hectares? _____

25. What was the total size of your expropriated land in square meters or hectares?

_____

26. How satisfied are you with the compensation payment amount?

1= Very Satisfied 2 = Satisfied 3 = Undecided 4 = Dissatisfied 5 = Very Dissatisfied

27. If you are not satisfied or very dissatisfied with the compensation payment, what is the reason for your dissatisfaction? _____

28. How much do you agree with the statement that the government paid the compensation timely?

1 = Strongly Agree 2 = Agree 3 = Unknown

4 = Disagree 5 = Strongly Disagree

29. Do you believe that the compensation provided was adequate?

1 = "Yes" 2 = "No"

30. How do you rate the adequacy of the compensation?

1 = Very Fair 2 = Fair 3 = Average 4 = Unfair 5 = Very Unfair

31. What was the purpose for which you used the compensation paid?

_____

32. What were the major problems/issues you observed regarding compensation?

_____

Part IV: Socio-Economic Effects of the Expropriation on Respondents

33. What was the annual household income level in birr before the expropriation? Monthly?

1= <20,000 2 = 20,000-30,000 3 = 31,000-40,000 4 = > 40,000

34. Your household annual income level in birr after the expropriation?

1= <20,000 2 = 20,000-30,000 3 = 31,000-40,000 4 = > 40,000

35. What was the change in your household's annual income level?

1. Decreased 2. Increased 3. Unchanged

36. If your annual income decreases, what are the reasons?

_____

37. What was your primary source of income before the expropriation?

_____

_____

38. What is your source of income after the expropriation?

_____

39. What was your primary employment/occupation before the expropriation?

1 = Only Agriculture 2 = Agriculture and other related 3 = Unemployed

40. What is your current employment or occupation status following the expropriation?

1 = Unemployed 2 = Permanently employed **3** = Engaged in temporary jobs

41. How do you rate your household consumption expenditure before the expropriation?

1 = Very low 2 = Low 3 = Medium 4 = High 5 = Very High

42. How would you describe your household's consumption expenditure after the expropriation?

1 = Very low 2 = Low 3 = Medium 4 = High 5 = Very High

43. How do you evaluate the change in your expenditures following the expropriation?

1 = Increased 2 = Decreased 3 = Not changed at all

44. If your expenditure increased, what are the reasons for the increase?

_____

_____

45. How would you describe the effects of the changes on your and your household's life?

1 = Improved 2 = Unchanged 3 = Worsened than before

46. To what extent you and your family are satisfied with your current living conditions?

1 = Very Satisfied

2 = Satisfied

3 = Neither satisfied nor dissatisfied

4 = Dissatisfied

5 = Very dissatisfied

47. Do you believe that the expropriation affected your life & livelihood?

1= "Yes" 2 = "No"

48. If "Yes" for #47, What are the negative impacts you faced due to the expropriation?

_____

_____

49. What are the economic losses you incurred because of the land expropriation?

49.1 Loss of Land 1= "Yes" 2 = "No" _____ha/m2

49.2 Loss of house/shelter 1= "Yes" 2 = "No"

49.3 Loss of Jobs/employment 1= "Yes" 2 = "No"

49.4 Loss of Income 1= "Yes" 2 = "No"

49.5 Loss of Livelihoods (please mention) 1= "Yes" 2 = "No"

49.6 Loss of economic activities 1= "Yes" 2 = "No"

49.7 Loss of food production 1= "Yes" 2 = "No"

49.8 Other please specify; _____

PART V: Farmers Perception on Resettlement and Livelihood Restoration Efforts by Government

1. Compensation and Financial Assistance

- The compensation provided to me was given promptly before displacement occurred.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- The financial compensation I received was sufficient to cover the full replacement cost of my lost assets.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I was able to effectively use the compensation to purchase land, and housing, or start a new business successfully.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- The replacement land provided to me has met or exceeded the quality and potential of the land I lost.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- The assistance provided for relocation expenses, including support for temporary housing, was thorough and adequate.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

2. Access to Resources and Services

- I currently have access to agricultural land that offers similar or better productive potential compared to what I had before.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- My land tenure in the new location is secure and provides long-term stability.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- The basic infrastructure in the resettlement area, including water, electricity, and sanitation services, is accessible and reliable.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I have sufficient access to essential social services such as healthcare, education, and other public services in the new location.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

3. Employment and Income Generation

- There are adequate job opportunities available to me in the new area where I have been resettled.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- The skills I possess match the types of jobs available in the new location, enabling me to find employment.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I have been able to diversify my income sources to ensure a more stable livelihood after resettlement.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- The income I earn after resettlement has been stable and consistent, without significant fluctuations.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

4. Social and Community Networks

- I have been able to maintain my social ties and networks effectively after relocation to the new area.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I am actively participating in community organizations and activities within the new location.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I have been able to maintain my cultural practices and traditions despite being displaced and resettled.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I feel a strong sense of belonging and integration within the new community where I now live.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

7. Development Assistance

- I had access to training programs designed to improve or develop new skills that would help me secure employment.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- The training programs provided were effective in enabling me to secure a job or improve my livelihood prospects.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I have access to microcredit or other financial services that support income-generating activities after resettlement.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I have been able to effectively use financial services to start or expand income-generating activities in the new location.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

8. Mediating Variable: Perceived Economic Security

- I feel that the financial support I received was adequate for ensuring my long-term economic stability.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I believe that the resources and services available to me in my new location contribute to my overall financial security.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I am confident that the job opportunities and income sources available to me in the new area will sustain my livelihood effectively.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

- I feel secure about maintaining my standard of living and achieving financial stability in my new community.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

9. Dependent Variable: Livelihood Restoration

- The government's efforts to restore my livelihood after resettlement have been effective and satisfactory.

[ ]Strongly Disagree [ ] Disagree [ ] Neutral [ ] Agree [ ] Strongly Agree

ANNEXE-2: Interview Checklist for Officials

Thank you for participating in this interview. Your insights are essential for the success of this academic study, and your responses will be kept confidential. We appreciate your open and honest feedback.

1. What legal instruments or frameworks were employed to justify the expropriation of land from farmers?
2. To what extent was the expropriation process conducted in accordance with legal procedures and participatory practices?
3. Were farmers adequately consulted at various stages of the expropriation process, including before, during, and after the expropriation?
4. Can you describe the process used for valuing the assets? Who conducted the valuation, and were they certified professionals?
5. Were farmers involved in the inventory and valuation of their properties? If so, in what capacity?
6. How transparent and clear do you believe the valuation process was? Were there any aspects that could have been improved?
7. Do you think the compensation provided to the farmers was fair and delivered in a timely manner? What factors influenced this?
8. How were displaced farmers resettled, and what measures were taken to ensure the sustainability of their livelihoods?
9. What types of support and assistance were provided to the households affected by the expropriation in terms of resettlement and livelihood restoration?

Annex 3: FGD Checklist for Expropriated Farmers

Thank you for participating in this focus group discussion. Your experiences and opinions are valuable for understanding the impact of land expropriation. Please feel free to share your thoughts openly.

1. How would you describe the legality and procedural aspects of the land expropriation process?
2. In what ways was the expropriation process consultative, transparent, and participatory? Were you adequately informed and involved throughout the process?
3. Were you actively involved in the inventory and valuation of your properties or assets? If so, how was this involvement managed?
4. Do you feel that the compensation you received was fair and provided in a timely manner? What factors influenced your perception of fairness?
5. Did you file any complaints regarding the expropriation process? How did the government address and resolve these complaints?
6. What were the positive and negative effects of the land expropriation on your life and livelihood?
7. How did the government assist you in restoring and maintaining your livelihood after the expropriation? Were these measures effective?
8. What significant challenges or problems have you encountered in your life following the land expropriation?
9. What steps have you taken to improve your livelihood since the expropriation? How successful have these measures been?
10. What recommendations do you have for the government to improve the land expropriation process and its impact on affected communities?

ANNEX-4: Guide for Document Review

This guide is designed to help systematically review the relevant legal and secondary documents for your study on land expropriation. The aim is to understand the legal framework and its alignment with both national and international standards.

Guiding Questions for Document Review:

1. What are the legal foundations for land expropriation in Ethiopia? Identify and describe the key statutes, regulations, and policies that authorize and govern land expropriation.
2. To what extent does the practice of land expropriation align with existing national laws and international principles and standards? Evaluate how Ethiopian land expropriation practices compare to international norms and guidelines.
3. Do the laws and regulations provide clear explanations of the reasons for land expropriation and the procedures that ensure fair compensation?
4. How do the legal documents address the protection of affected individuals' rights to adequate resettlement and rehabilitation support?
5. Review the constitutional provisions related to land ownership, land expropriation, and the rights of displaced individuals.
6. Examine the proclamations and any subsequent revisions to understand the legal framework governing land expropriation in Ethiopia.
7. Analyze this regulation for its provisions on land expropriation procedures, valuation, and compensation.
8. Review relevant sections of the Civil Code that pertain to property rights and expropriation processes.
9. Evaluate the lease proclamation for its impact on land use and acquisition practices.
10. Investigate the Addis Ababa City Administration (AACA) regulations and directives concerning land expropriation, valuation, compensation, resettlement, and rehabilitation.

ANNEX 5: Checklist for Field Observation

During field visits, the researcher will observe and document various aspects related to the areas where displaced farmers now live and the status of land development.

The focus will be on the following key areas:

1. Assess the current development status of the land acquired by the government. Document the progress and implementation of planned projects.
2. Determine whether the acquired land is being used for its intended purpose. Note any discrepancies between the planned use and the actual use.
3. Observe and record the living and housing conditions of the displaced households. Evaluate the adequacy and quality of the housing provided.
4. Examine the availability and quality of services and facilities in the new living areas. This includes infrastructure such as water supply, sanitation, health services, and education facilities.
5. Analyze the socio-economic conditions of the affected farmers in their new locations. Assess changes in their income levels, employment opportunities, and overall economic stability.
6. Document the various economic activities that the displaced farmers are engaged in after the land acquisition. Evaluate the success and sustainability of these activities.

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The dynamics of urbanization, land use land cover changes, and land expropriation in Addis Ababa, Ethiopia

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Over the past two decades, Addis Ababa has witnessed a relentless transformation in its land use and land cover. Primarily driven by the conversion of agricultural land through extensive expropriation in the city's expansion areas. The study explores the dynamic land use land cover changes and associated land expropriations from peri-urban farmers in the rapidly growing Addis Ababa, Ethiopia. The study utilized a time series of global land cover and land-use change datasets (GLAD) covering the years 2000–2020. Moreover, empirical data is gathered through a household survey conducted among 349 systematically selected expropriated farmers across four sub-cities of Addis Ababa. The findings underscore a profound shift in the city's land use and land cover over the past two decades. The built-up area emerges as the predominant land cover, witnessing a substantial increase of 25.28% (13,150.30 ha) over the past two decades. Concurrently, agricultural land and vegetation cover decreased by 15.92% and 9.35%, respectively, indicating a significant outward expansion of the city. This expansive growth, driven by the city's rapid development, has resulted in extensive land expropriations primarily affecting peri-urban farmers. The expropriations were mainly for housing, investment, industrial parks, and infrastructure development. Thus, we urge the city administration to carefully manage the horizontal expansion of built-up areas at the expense of the agricultural land and vegetation cover. Finally, we recommend holistic and sustainable development strategies, developed collaboratively with local communities and planners, to safeguard the long-term wellbeing of city residents.

KEYWORDS

urbanization, urban expansion, land use change, land expropriation, Addis Ababa, Ethiopia

1 Introduction

Urbanization, land use land cover (LULC) changes, and land expropriation are deeply interconnected processes that shape the development trajectories of cities worldwide. Rapid urbanization often drives significant LULC changes, which in turn are facilitated by land expropriation mechanisms used to acquire land for public development projects. The Food and Agriculture Organization (FAO, 2009) stresses the role of land expropriation in transforming land use patterns to accommodate urban growth. Consequently, urbanization has become a dominant global development agenda, with trends

indicating a recurrent rise (Champion and Hugo, 2017; Murayama and Estoque, 2020). Since 2007, over half of the world's population resides in urban areas, with projections suggesting that by 2050, 70% of the global population will become urban dwellers (Buettner, 2015; UN, 2019).

However, the degree and pace of urbanization vary significantly across regions and countries. Developed nations in Western Europe and North America have achieved high urbanization levels, exceeding 75%, primarily driven by economic development and industrialization (UN, 2018; World Bank, 2021). In contrast, developing regions in Africa and Asia experience lower urbanization levels but higher rates of urban transformation. This form of urbanization is characterized by rapid population growth, rural-urban migration, and extensive unregulated urban expansion, posing severe socio-economic and environmental challenges (Buettner, 2015; Cohen, 2006; UN, 2018).

Sub-Saharan Africa characterizes this trend with its low urbanization level but a high rate of urbanization, often called "false urbanization" due to the lack of socio-economic development driving the process. Despite this, future urbanization is projected to be highest in these regions, with Africa's urban population expected to triple by 2050, adding 800 million people (Alaci, 2010; Annez et al., 2010; Cohen, 2006). This rapid urban expansion leads to LULC changes, primarily through increased land expropriation in peri-urban areas, adversely affecting farmers' livelihoods (Asabere et al., 2020; UN, 2018).

Ethiopia exemplifies this scenario as one of the least urbanized countries in sub-Saharan Africa, with an urbanization level of approximately 22%. However, it is currently experiencing one of the highest urbanization rates in the region (Tegenu, 2010; Adam, 2014; GebreEgziabher and Yemeru, 2019). Addis Ababa, Ethiopia's capital, clearly illustrates this rapid urbanization, driven by high population growth and substantial migration from other parts of the country (Dorosh and Schmidt, 2010; Ozlu et al., 2015). Over the past two decades, Addis Ababa has expanded extensively into surrounding areas, altering agricultural lands and natural landscapes into urban built-up areas through land expropriation from farmers in the surrounding areas of the city (Busho et al., 2021; Terfa et al., 2019; Ayenachew and Abebe, 2024).

The conversion of LULC due to urban expansion often involves transforming agricultural land and natural vegetation into residential, commercial, and industrial developments, changing the city's spatial structure and ecology (Graetz et al., 2016; Teklemariam and Cochrane, 2021). This urbanization process necessitates land expropriation for various urban development projects, including housing, industrial parks, real estate developments, and mega infrastructure projects (Yntiso, 2008; Kasa et al., 2011; Graetz et al., 2016; Terfa et al., 2019; Bula, 2020).

Understanding the patterns and trends of urbanization-induced LULC changes and related land expropriations in peri-urban areas is crucial for effective urban planning, resource allocation, and sustainable development. This study aims to contribute valuable understanding into the ongoing urbanization-related LULC changes and land expropriation practices in Addis Ababa, serving as a basis for policy reform, policymaking, and urban planning. Additionally, the findings also commend strategies for managing urban growth and mitigating the potential social and economic impacts associated with rapid urbanization-induced land expropriation and LULC changes.

Previous studies on LULC changes have primarily focused on rural areas, examining the effects of climate change and its impacts on urban water quality (Arsiso et al., 2018; Balew and Semaw, 2022). However, the dynamics of urbanization-induced LULC changes and related land expropriation in Addis Ababa remain understudied. This research seeks to fill this gap by exploring and analyzing the dynamic scenario of Addis Ababa's urbanization-induced LULC changes, leading to land expropriation and its adverse effects on the livelihoods of peri-urban farmers.

This study is guided by two primary research questions: First, how does rapid urbanization lead to LULC changes in Addis Ababa? Second, how do urbanization-induced LULC changes lead to land expropriations, and how do these expropriations adversely affect farmers in the peri-urban areas of Addis Ababa, Ethiopia? The next section presents the materials and methods employed for this study. The results and discussions are addressed in the third section. Finally, the conclusion summarizes the major findings and draws policy implications.

2 Materials and methods

2.1 The study area

This study is undertaken in Addis Ababa, the capital and largest metropolitan city in Ethiopia (Figure 1). It is one of the fastest urbanizing cities in Africa driven by population and economic growth (Ozlu et al., 2015). It is not only the seat of the federal government of Ethiopia but also the African Union (AU) and its predecessor, the OAU. It also hosts the headquarters of the United Nations Economic Commission for Africa (UNECA) and numerous other continental and international organizations (Wubneh, 2013).

Addis Ababa is a chartered city with three levels of government structure, the city administration, sub-cities, and woreda. Administratively, the city is divided into eleven sub-cities which are the second administrative level next to city administration. By areal coverage size, Bole was the largest sub-city followed by Akaki-Kality and Yeka. While Addis Ketema is the smallest followed by Lideta and Arada Sub-cities. Whereas, "Lemi Kura" is the newly structured 11th sub-city which is detached from the Bole and Yeka sub-cities. The sub-cities are also divided into "woredas," which are the smallest administrative units in the city. There are about 116 woredas in the city administration. The number of woredas varies based on their size (Central Statistical Agency (CSA, 2013). This study is conducted on samples taken from four sub-cities namely Yeka, Bole, Akaki-kality, and Nifas-silk Lafto which are purposively selected because much of the city's expansion takes place in these sub cities and most of the expropriated farmers are also from these areas as per the data obtained from the city administration (Figure 1).

These days the population of the city is estimated to be over 5 million accounting for about 25 percent of the country's urban population (Graetz et al., 2016). The city's population is mounting very rapidly like many African cities and it is also projected to double in the next 10–15 years (Central Statistical Agency (CSA, 2013). While, economically, the city is considered as the engine of the

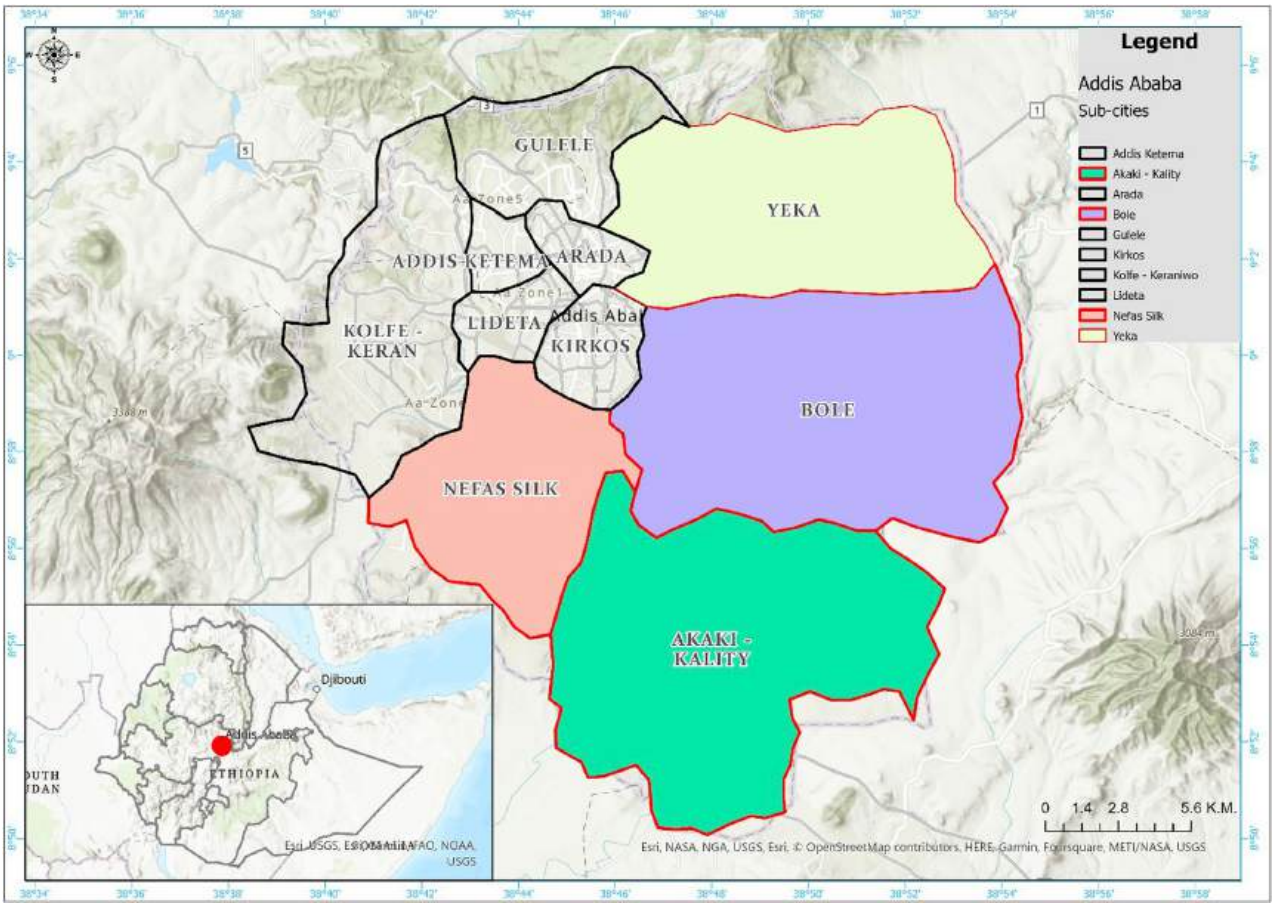

FIGURE 1
Map of the study area.

nation's economy, socio-cultural and political activities are growing very rapidly. The city alone currently contributes approximately 50% of the national GDP (UN-HABITAT, 2017). Geographically, Addis Ababa is located at 9°1′48″N latitude and 38°44′24″E longitude. The city is located at the core of the country covering a total area of 540 square kilometers. Addis Ababa is also the third highest city in the world, next to La Paz and Quito in Latin America with an altitude ranging from 2,100 m at "Akaki" in the south to 3,000 (9,800 ft) meters at "Entoto" Hill in the Northern side (Weldegebriel et al., 2023). The city has been expanding extensively and also undertaking extensive land expropriation in expansion areas of the city.

The city of Addis Ababa functions under a three-tiered government structure comprising the city administration, sub-cities, and woredas. Sub-cities, serving as the second administrative layer beneath the city administration, play a pivotal role in governance and urban management. Bole sub-city ranks as the largest sub-city in terms of area coverage, followed by Akaki-Kality and Yeka. Conversely, Addis Ketema represents the smallest sub-city, followed by Lideta and Arada. Sub-cities are further divided into woredas, constituting the smallest administrative units within the city administration. Addis Ababa incorporates approximately 116 woredas, with variations in rank based on their respective sizes (CSA, 2013). For this study, four sub-cities Yeka, Bole, Akaki-Kality, and Nifas-Silk Lafto were purposively selected due to their substantial contribution to the city's expansion and the prevalence of expropriated farmers within these areas. Figure 1 illustrates the map of the study area, showing the four sub-cities purposively chosen for this study.

2.2 Data sources

The study utilized two major data sources. The first data source is a time series Global Land Cover and Land Use Change (GLAD) datasets which were subset to the study area extent. This land use and landcover data was produced by (Potapov et al., 2022).

The second data source is a socio-economic survey data collected from 349 land expropriated farmer households from four purposively selected sub-cities (Yeka, Bole, Akaki-Kality, and Nifas-Silk Lafto sub-cities) of Addis Ababa city Administration in 2020.

2.3 Method used

2.3.1 Land use and land cover change detection

To elucidate urbanization in the study area, land use and land cover change detections were conducted. This study used a global

level of land use and land cover change products from 2000 to 2020 (Potapov et al., 2022). This global level of land use and landcover products were subset to the study area extent and the resultant change in major land use and landcovers over two decades are examined. Typical land use land cover change detection follows three major procedures. This includes the pre-processing of the input data, processing that involves image classification, and the post-processing phase which is mainly concerned with the validation of the classification result. The summary of the methods employed in generating the land use and land cover products are described below.

2.3.1.1 Landsat data

Landsat satellite image data archive enabled multidecadal monitoring of land use and landcover at a global scale at 30 m spatial resolutions. The study makes use of spatially and temporally consistent Landsat GLAD ARD inputs (https://glad.umd.edu/ard). The GLAD ARD constitutes 16-day global Landsat normalized surface reflectance and brightness temperature composites combined from the best quality observations. It processes and integrates the entire Landsat Collection 1 Tier 1 data archive over the land area between 75°N and 56°S from 1997 to 2020 (Potapov et al., 2022).

2.3.1.2 Pre-processing

Remote sensing datasets often contain anomalies that require preprocessing to enhance their utility. Overcoming issues like atmospheric scattering, absorption, and cloud interference is crucial to optimize their usefulness. The GLAD ARD image underwent a series of preprocessing steps aimed at maximizing its quality. These steps involved: 1) assessing the quality of observations, 2) Normalizing reflectance to mitigate the impact of atmospheric effects, absorption, and land surface anisotropy, and 3) aggregating the best quality data into 16-day composites. Each 16-day composite comprises normalized surface reflectance data for visible, near-infrared, and shortwave infrared Landsat bands, along with brightness temperature information. Additionally, these composites include a data quality layer indicating the presence of atmospheric contamination such as clouds, haze, cloud and topographic shadows, open water, as well as snow/ice coverage (Potapov et al., 2022).

2.3.1.3 Image classification and validation

Image classification is the process of classifying image pixels into different thematic classes. This stage can be considered as the processing stage of land use and landcover mapping. The classification outcome is often affected by classification errors and as a result, the outcome should not be taken for granted and thus needs validation of its accuracy. The accuracy assessment/validation is often the post-processing stage in land use and land cover mapping (Zhu and Woodcock, 2014). The analysis derived different landcover types except open water using consistently processed Landsat Analysis Ready Data (ARD) produced by the Global Land Analysis and Discovery Laboratories (GLAD) referred to as GLAD ARD.

Various supervised classification techniques were employed to map different land cover types. Specifically, decision tree models were individually calibrated using manually collected training data to map cropland and perennial snow and ice. To estimate forest height, a regression tree model was utilized and calibrated using forest structure measurements obtained from the Global Ecosystem Dynamics Investigation Lidar (GEDI). The identification of built-up lands relied on a deep learning convolutional neural network (CNN) algorithm trained with Open Street Map (OSM) data. These models underwent calibration either at local levels (for forest height and cropland mapping) or regionally for other land cover products. For surface water mapping, Landsat data classification per scene and time series analysis within Google Earth Engine were employed. Each global thematic product was independently validated using statistical sample analysis, with reference data gathered through visual interpretation of the most suitable high-resolution satellite images and Landsat time series (Potapov et al., 2022; Sumari et al., 2020).

2.3.1.4 Land use and landcover classes of Addis Ababa

The land use and landcover products from the above sources were subset to the study area extent for 2000, 2005, 2010, and 2020 reference years. The different land use and land covers in the city were aggregated into four major classes i.e. Built-up, Agriculture, Vegetation, and Wetland. The area of each land use and the land cover class was computed in hectares and their spatiotemporal dynamics were analyzed by comparing the -post-classification land use and land cover maps using ArcGIS software. The results were also summarized and presented with tables, graphs, and maps.

2.3.2 Socio-economic survey

The study also used a socio-economic survey method combined with field visits to collect relevant data. Primary data was obtained from expropriated farmers from four purposively selected sub-cities of Addis Ababa (i.e.,.Yeka, Bole, Akaki-Kality, and Nifas-Silk Lafto sub-cities).

The survey questionnaire was administered as a primary data generation tool. To do so, the target population comprised expropriated farmer households who lost their land due to the expropriation of land for urban development projects in four sub-cities located in the expansion areas of Addis Ababa. Household heads were selected as sample respondents. The list of expropriated farmer households was obtained from the city's Farmers Rehabilitation & Urban Agriculture Project Office (FRUAPO) in May 2020. From the total of 5,891 expropriated farmer households in the four sub-cities, 362 samples were selected proportionally using Kothari's 2004 formula (Kothari, 2004), considering a confidence level of 95%, a probability error of 5%, and an estimated proportion of the population. The sample included 362 affected farmer households, of which 349 contacted and completed the questionnaire, making a response rate of 96% (Kothari, 2013). Moreover, secondary data were acquired through reviews of both published and unpublished documents, such as research articles, the FDRE constitution, proclamations, regulations, and reports from relevant offices.

2.4 Methods of data analysis

The spatiotemporal land use and land cover changes were analyzed using GIS, utilizing the time-series Global Land Cover

TABLE 1 Temporal changes of Addis Ababa's LULC from 2000–2020.

LULC Classes	2000		2005		2010		2015		2020	
	ha	%	ha	%	ha	%	ha	%	ha	%
Built-up	23,370.8	44.92	25,749.3	49.49	28,108.3	54.02	32,874.5	63.19	36,521.1	70.19
Agricultural	17,075.5	32.82	15,604	29.99	13,987	26.88	11,025	21.19	8,793.42	16.9
Vegetation	11,558.1	22.21	10,651.8	20.47	9,910.29	19.05	8,108.44	15.58	6,691.89	12.86
Wetland	24.4793	0.05	23.8195	0.05	23.2665	0.04	20.9631	0.04	22.4235	0.04
Total	52,028.9	100	52,028.9	100	52,028.86	100	52,028.9	100	52,028.8	100

TABLE 2 The rate of Addis Ababa's LULC change from 2000 to 2020.

LULC classes	Δ2000–2010		Δ2010–2020		Δ2000–2020		Yearly change	
	Δ in ha	Δ in %	Δ in ha	Δ in %	Δ in ha	Δ in %	Δ in ha	Δ in %
Built-up	4,737.5	9.1	8,412.8	16.2	13,150	25.28	657.515	1.26
Agricultural	−3,089	−5.94	−5,193.6	−10	−8,282	−15.92	−414.104	−0.80
Vegetation	−1,648	−3.16	−3,218.4	−6.2	−4,866	−9.35	−243.311	−0.47
Wetland	−1.213	−0.01	−0.843	0	−2.056	0.00	−0.10279	0.00

and Land Use Change (GLAD) datasets. While the collected survey data were analyzed using descriptive statistics within SPSS version 24. This analysis was further supplemented with secondary information from various reliable sources, such as reports. Results were summarized and presented using statistical tables and graphs. The findings were effectively communicated through figures, tables, and graphs to provide a comprehensive overview of the issue under study.

3 Results and discussions

The study intended to examine the dynamics of urbanization, land use land cover changes, and land expropriation in Addis Ababa in the past two decades from 2000 to 2020. For this purpose, the land use land cover classes of the city were re-classified into four major land use land cover classes since these are the dominant LULC types for this study. These are built-up areas, agriculture, vegetation, and Wetland. The proportions and changes in these land use land cover types are discussed below.

3.1 The changing scenario of Addis Ababa's land use land cover

For this study, the Land use/land cover of Addis Ababa City was reclassified into four LULC classes as these are the major LULC types in the study area. These are Built-up areas, Agricultural, Vegetation cover, and Wetlands in 2000. Images are classified into five temporal periods (2000, 2005, 2010, and 2020) to show a clear picture of the spatial and temporal distribution of LULC change in the city (Table 1) and the rate of changes for each LULC class (Table 2). The results indicated that the built-up area covers the highest share from the LULC classes of the city accounting for 23,370.8 ha (44.92%) of the city's total area followed by agricultural land at 17,075.5 ha (32.82%) and vegetation covers 11,558.1 ha (22.22%) of the city's total LULC in 2000. Wetlands account for the smallest portion of the city's LULC class which is about 24.48 ha (0.004%) of the total land area of Addis Ababa city. The land use and land cover change of the city in the past two decades is clearly illustrated in Table 1 below.

However, after 20 years in 2020, there was a significant change in the land use/land cover classes of the city. Still, the built-up area is the dominant land use type and has increased by 13,150.30 ha (25.27%) and reached 36,521.10 ha (70.19%) of the city's total land use land cover implying a rapid pace of urban expansion in the city mainly because of the high population growth due to the natural population growth and migration from all other regions in the country. Previous studies by Arsiso et al. (2018), Moisa and Gemeda, (2021), Balew and Semaw (2022), and Mulugeta et al. (2017) also ensured the alarming growth of the city's built-up areas at the expense of vegetation cover and grasslands and its impact on surface urban heat and climate of Addis Ababa and the surrounding.

Contrarily, agricultural land has decreased significantly by 8,282.08 ha (15.92%) from 17,075 ha (32.82%) to 8,793.42 ha (16.90%) in 2020. Similarly, vegetation covers also decreased by 4,866.21 ha (9.35%) from 11,558.1 ha (22.22%) in 2000 to 6,691.89 ha (12.86%) in 2020. Whereas, Wetland also shows a reduction but insignificantly i.e. it decreased from 24.48 ha in 2000 to 22.4235 ha in 2020 (Table 1). Therefore, the five reference years (2000, 2005, 2010, 2015, and 2020) have clearly illustrated the dynamics of land use land cover changes of the Addis Ababa City Administration (AACA) in the past 20 years (See Table 1).

However, the degree and yearly rate of changes clearly showed the temporal changes of different LULC classes. As the result

(Table 2) shows, the built-up area has been continuously increasing from 2000 to 2010 and 2010–2020. While agricultural land, vegetation cover, and wetlands are showing continuous trends of decline in the study periods from 2000 to 20,220 (Table 2). Therefore, throughout the whole study period from 2000 to 2020, the built-up area was in an increasing trend of change while the other three LULC classes were showing a decreasing trend of change. This is clear evidence that shows the rapid expansion of Addis Ababa towards the surrounding by engulfing the agricultural lands and vegetation covers. The city administration acquires land in such expansion areas for public development projects via expropriation at a low compensation rate which leads to conflicts with farmers in such areas. The survey results also indicated that expropriated farmers in the study area were adversely affected and lost their lands, income, employment, and agricultural production. The Rate of LULC Change from 2000 to 2020 in the city is clearly illustrated in Table 2 below.

Table 2 shows a comprehensive illustration of the Land Use/ Land Cover (LULC) changes in Addis Ababa from 2000 to 2020, providing critical insights into the dynamic transformation of the city's landscape. The data reveals significant shifts in various land use classes, emphasizing the city's evolving urban environment.

Built-up areas experienced substantial growth over the two decades, with a cumulative change of 13,150 ha, representing a remarkable 25.28% increase. This indicates a rapid urban expansion, with an annual change of 657.515 ha, or a yearly growth rate of 1.26%. In this study, the built-up area encompasses artificial man-made surfaces associated with infrastructure, commercial activities, and residential land uses, as defined by Landsat spatial resolution. The analysis highlights a substantial increase in the built-up area from 2000 to 2020, reflecting a significant urbanization and developmental trajectory in Addis Ababa. Specifically, the built-up area expanded from 44.92% to 70.19%, indicating a 25.27% increase. This expansion emphasizes the dynamic nature of urbanization in Addis Ababa, driven by escalating demands for infrastructure, commercial spaces, and residential developments. Consistent with prior research by Arsiso et al. (2018) and Mulugeta et al. (2017), the study highlights a transformative shift in land use, characterized by substantial growth in built-up areas at the expense of agricultural and vegetation spaces. The comprehensive analysis captures the essence of urban development dynamics in Addis Ababa and the contentious practice of land expropriation over the specified period.

In contrast, agricultural land faced a consistent contraction, with a cumulative loss of 8,282 ha (15.92%), implying a significant reduction in agricultural practices amid rapid urbanization and continuous land expropriation by the city administration. Agricultural and vegetation covers were converted into built-up areas, amounting to 8,282.08 ha (15.92%) and 4,866.21 ha (9.35%) between 2000 and 2020, respectively. The study advocates for the implementation of checks or control mechanisms to curb the rapid expansion of the built-up area at the expense of agricultural and vegetation covers, driven by expropriation and informal developments.

In the initial period, particularly in 2000, agriculture was dominant in the eastern, southern, and southwestern parts of the city. However, a stark transformation occurred in the subsequent years, with agricultural land experiencing a considerable decline in 2005, 2010, 2015, and 2020. Simultaneously, the built-up area steadily increased in these regions, entirely at the expense of diminishing agricultural land and vegetation covers, as clearly illustrated in Figure 2 below.

The findings indicate the need for sustainable urban planning practices that balance urban expansion with the preservation of agricultural and green spaces. The rapid urbanization in Addis Ababa poses significant challenges to land management and necessitates strategic interventions to ensure sustainable development while safeguarding essential ecological and agricultural resources.

Therefore, this decline underscores the horizontal growth of the city encroaching on agricultural land, primarily through compulsory land acquisition for various city development projects, including housing, real estate, industry parks, and infrastructure developments.

Whereas the vegetation cover in the city exhibited a consistent pattern of reduction, diminishing by a cumulative loss of 4,866 ha (9.35%) indicating significant environmental transformations, raising concerns about biodiversity and ecological balance similar to the findings of Arsiso et al. (2018) and Mulugeta et al. (2017). The yearly decrease of 243.31 ha (0.47%) in the city's vegetation cover confirmed the results of previous findings. This consistent reduction in vegetation cover raises serious concerns about environmental sustainability and biodiversity degradation within and around the city, as emphasized by studies such as those conducted by Mohamed and Worku (2019).

Surprisingly, wetlands demonstrated minimal change, experiencing a decrease of 1.213 ha (0.01%) from 2000 to 2010, with almost negligible variations in the subsequent decade. The overall reduction of 2.056 ha (0.00%) and a marginal yearly change of 0.10279 ha (0.00%) suggest relative stability in wetland areas within the city. In the final analysis, wetland areas exhibited a slight reduction from 24.4793 ha (0.047%) in 2000 to 22.42 ha (0.043%) in 2020. The change of 2.0558 ha, equivalent to a 0.004% decrease, implies a degree of stability in wetland coverage despite the broader landscape transformations witnessed in the city over the past two decades.

Therefore, this comprehensive analysis of LULC changes in Addis Ababa indicated the intricate interplay between urbanization, LULC changes, and related land expropriation dynamics. The noticeable trends underline the need for sustainable land management practices to balance the imperatives of urban growth with environmental conservation and agricultural resilience. The findings highlighted the swift urbanization and horizontal expansion of Addis Ababa City, notably at the expense of diminishing agricultural and vegetation covers due to their conversion into built-up urban areas through land expropriation from farmers. This conversion has tangible consequences, adversely affecting agricultural production, farmers' livelihoods, and ecosystem services. The prevalent practice of extensive land expropriation by the city administration, particularly in expansion areas of the city like in Yeka, Bole, Akaki-Kality, Nifas-Silk Lafto, and Kolfe Keranyo sub-cities, clearly indicates this urban shift. Moreover, the survey results also support this trend, indicating that over 6,431 household farmers have faced displacement through expropriation in these five sub-cities. The uncontrolled expansion of the city, coupled with

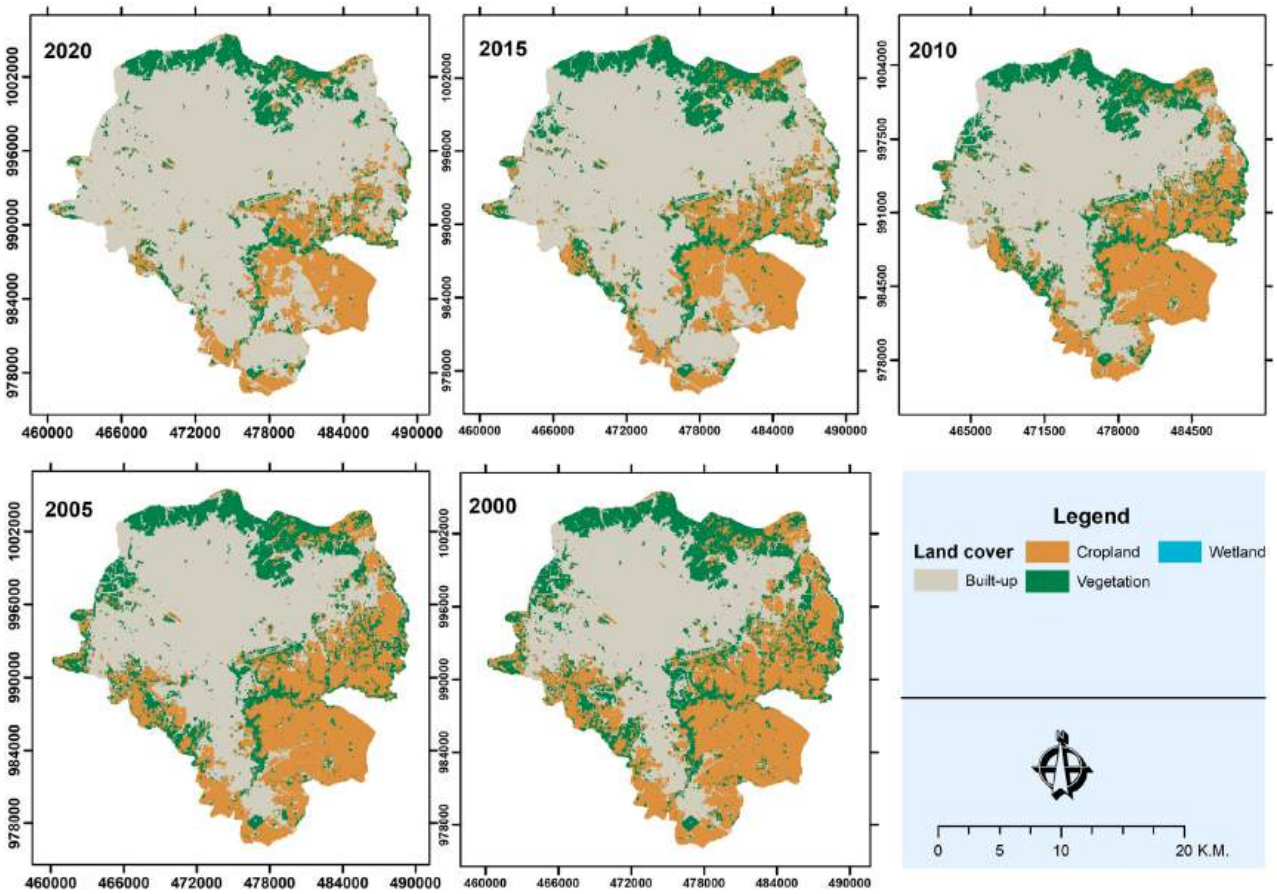

FIGURE 2
Trends of LULC change in Addis Ababa from 2000 to 20,202.

widespread land expropriation for major urban development initiatives such as condominium housing projects (Koye Feche, Tulu Dimtu, Bole Arabsa, Gelan, Jemmo, Yeka Abado condominiums), industry and ICT park developments, Addis Ababa Bole Airport expansion projects, and other infrastructure development projects has led to the displacement of numerous farming communities in Addis Ababa as previously confirmed by Kasa et al., 2011, and Teklemariam and Cochrane (2021).

3.2 Urbanization and land expropriation in Addis Ababa

Addis Ababa has experienced rapid urbanization over the past two decades, a trend supported by the findings of Terfa et al. (2019) and Ozlu et al. (2015). The city's population has surged due to both natural growth and significant rural-urban migration, with current estimates placing the population at over 5 million, according to the Central Statistical Agency of Ethiopia (CSA, 2013). This demographic expansion has been accompanied by notable increases in urban development, as reflected in the substantial population growth, urban expansion, and shifts in built-up areas reported by Arsiso et al. (2018) and Mulugeta et al. (2017). Specifically, the built-up area of Addis Ababa has expanded dramatically, with a cumulative increase of 13,150 ha from 2000 to 2020, representing a 25.28% rise. This robust urban expansion indicates a yearly change of 657.515 ha or an annual growth rate of 1.26%. The city's growth has predominantly taken the form of peripheral expansion, integrating agricultural and other land uses from surrounding areas.

This peripheral expansion has been facilitated through extensive land expropriation, leading to substantial losses in agricultural land, income, agricultural production, vegetation covers, and wetlands. The nexus between urban growth, land use land cover (LULC) changes, and extensive land expropriation for development projects such as residential areas, commercial centers, and infrastructure initiatives has had profound implications. Studies by Bula (2020), Haregeweyn et al. (2012), and Teklemariam and Cochrane (2021) substantiate these findings, highlighting the significant disruptions caused to the lives of displaced farmers.

The rapid urbanization of Addis Ababa has necessitated the conversion of peripheral agricultural lands into urban built-up areas. This transformation has been primarily driven by the city's need to accommodate its growing population and expand its infrastructure. As a result, the local government has engaged in extensive land expropriation to secure land for development projects. However,

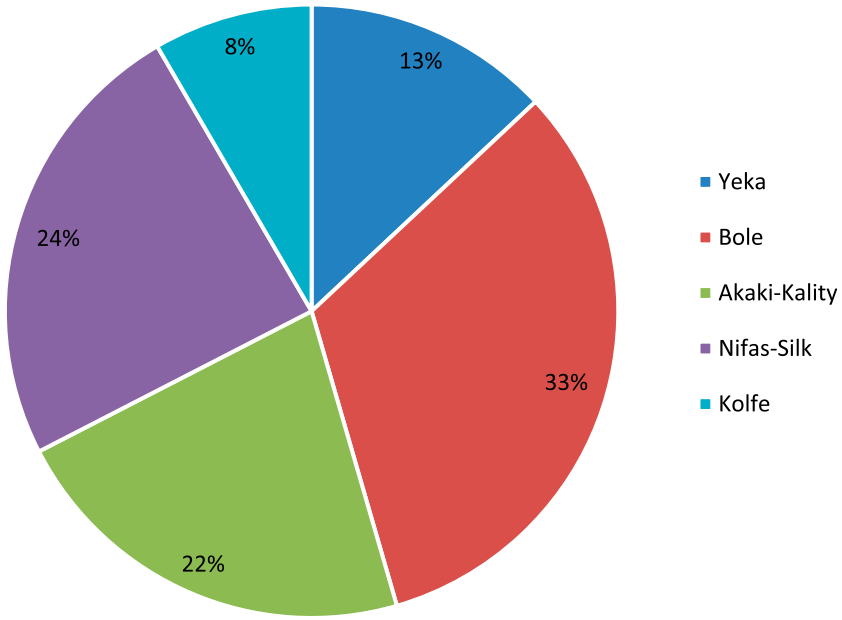

FIGURE 3
Number of displaced farmers by expropriation (AACA, 2020).

this process has often involved inadequate compensation and insufficient relocation assistance for the affected farmers. The displacement of farmers without adequate support has led to a loss of livelihoods, as these individuals are forced to abandon their agricultural activities and adapt to new, often less stable, forms of employment. This finding also substantiates the results of Busho et al. (2021).

Moreover, the environmental impact of this urban expansion cannot be overlooked. The conversion of agricultural land and natural landscapes into urban areas has led to a decline in vegetation cover and the loss of wetlands, which are crucial for maintaining ecological balance. The reduction in agricultural production also has broader implications for food security and the local economy, as many farmers rely on their land for both subsistence and income.

Overall, the rapid urbanization of Addis Ababa has resulted in extensive land expropriation in the city's periphery, leading to significant socio-economic and environmental consequences. The process of urban growth has displaced many farmers, disrupted their livelihoods and caused substantial agricultural and ecological losses. Addressing these challenges requires a comprehensive approach that includes fair compensation, adequate relocation assistance, and sustainable urban planning to ensure that the benefits of urbanization are equitably distributed and that the adverse impacts on displaced communities and the environment are mitigated.

Figure 3 illustrates the number of farmers displaced in Addis Ababa over the past years across five sub-cities. Bole sub-city stands out with the highest number of displaced farmers at (2,089), followed by Nifas-Silk Lafto (1,554), Akaki-Kality (1,410), Yeka (838), and Kolfe-Keranyo with the lowest count of 540 displaced farmers. In total, the data reveals that more than 6,431 farmer households have been displaced by expropriation in Addis Ababa City Administration. The number of displaced farmers varies among the different sub-cities related to the sub-cities locations and their suitability for diverse urban development projects like infrastructure, residential areas, and industries.

As indicated in (Table 3), land expropriation in Addis Ababa is predominantly driven by four main purposes: condominium housing development (62.46%), investment (21.49%), industry and ICT parks (8.88%), and infrastructure development (7.16%). This strategic allocation of land highlights the city's efforts to address housing shortages, stimulate economic growth, promote industrialization, and enhance urban infrastructure.

However, the socio-economic survey results underscore significant adverse effects on the livelihoods of expropriated farmers. A notable 45.5% decrease in their income illustrates the severe economic challenges faced by these individuals, who have lost their primary source of livelihood. Before expropriation, 99% of the respondents were engaged in agriculture, but post-expropriation, there has been an immense shift in employment status. The unemployment rate among farmers increased by 33%, and 42.4% of them transitioned to temporary, and low-income jobs. It is only 24.6% of the expropriated farmers, particularly those with better educational backgrounds, secured permanent employment, showing a significant disparity in the post-expropriation job conditions. This situation indicates the critical role of education in enabling former farmers to access stable and higher-income generating jobs. These findings highlight the urgent need for comprehensive resettlement, and rehabilitation support arrangements, such as fair compensation, resettlement assistance, and vocational training programs, to enhance the transition of the displaced farmers into new urban-based livelihoods. Moreover, promoting inclusive urban planning and development that considers the needs of peri-urban communities is essential for ensuring that urban growth benefits

TABLE 3 The purposes of Land expropriation.

No	Reason/purposes of expropriation	Frequency	Percentage
1	Condominium housing development	218	62.46
2	Investment	75	21.49
4	Industry % ICT Park	31	8.88
5	Infrastructure	25	7.16
	Total	349	100.00

Source: Own survey, 2021.

all residents equitably, thus fostering sustainable and socially responsible development in Addis Ababa City.

3.3 Conclusion and policy implications of the study

This study examined the urban expansion-induced Land Use Land Cover (LULC) changes and related land expropriations in Addis Ababa, shedding light on their profound implications. The findings reveal that Addis Ababa is undergoing rapid urbanization, with significant changes in LULC types over the past two decades. For instance, the built-up area of the city has increased dramatically by 25.28% from 2000 to 2020. This substantial growth in built-up areas especially in the fringe areas of the city like in Bole, Nifas-Silk, Akaki-Kality, Yeka, and Kolfe-Keraniyo sub-cities indicates the swift and extensive urban expansion in the city.

Whereas agricultural land and vegetation cover decreased by 15.92% and 9.35%, respectively, over the past 20 years due to the influence of the expanding built-up areas, resulting in the expropriation of land from many farmers. This shift in land use patterns has significant implications for food security, environmental sustainability, and biodiversity. Urban expansion-induced land expropriation has profoundly affected farmers' livelihoods, causing loss of fertile land, income, employment, and food production, leading to increased impoverishment among affected communities.

The rapid urbanization and expansion of Addis Ababa City are attributed to drivers such as population growth and economic development. Population growth was driven by both high rural-urban migration and very high natural increase, which led to an increased demand for housing, infrastructure, and services.

To address these challenges, the study recommends that the city administration should take measures to control the city's growth, which currently occurs at the expense of agricultural land and vegetation, by adversely affecting farmers' livelihoods. An inclusive and sustainable approach to urban development should be adopted, to minimize land expropriation and promote inclusive and resilient urban growth. The city administration should collaborate with communities and urban planners to guide Addis Ababa towards an environmentally conscious urban center, conserving natural resources for future generations.

Thus, the findings of this study are significant for understanding the dynamics of urbanization-induced LULC changes and land expropriation practices in Addis Ababa. Recognizing these changes is crucial for adjusting urban development policies, strategies, and directives to manage the city's expansion wisely and mitigate the adverse effects of land expropriations in peri-urban areas. The study also serves as a valuable reference for further studies on similar issues in Ethiopian cities or other developing countries.

However, the study's scope was limited in certain parts of the city due to time and financial constraints. Therefore, further detailed and comprehensive studies should be conducted, including an examination of the driving forces behind urbanization and the related challenges. Addressing these issues is essential for ensuring sustainable urban development and improving the livelihoods of affected communities.

Data availability statement

The original data supporting the conclusion of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the [patients/ participants OR patients/participants legal guardian/ next of kin] was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

YAA: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Resources, Software, Supervision, Validation, Visualization, Writing–original draft, Writing–review and editing. BGA: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Resources, Software, Supervision, Validation, Visualization, Writing–original draft, Writing–review and editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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Navigating urbanization implications: effects of land expropriation on farmers' livelihoods in Addis Ababa, Ethiopia

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This paper investigates the effect of land expropriation on the livelihoods of farmers expropriated from the peripheries of Addis Ababa, Ethiopia. A mixed methods approach, including household surveys, key informant interviews, field visits, and document reviews, was employed. A sample of 349 expropriated farmer household heads from four purposively selected sub-cities was drawn using systematic random sampling. The findings reveal significant adverse effects of land expropriation on the livelihoods of expropriated farmers, such as income losses, unemployment, and reduced agricultural production, primarily due to a lack of transparency and consultation during the expropriation process, inadequate compensation, and insufficient resettlement support provided by the city administration. Consequently, the living conditions of most farmers deteriorated in the post-expropriation. To address these effects, the study recommends enhancing procedural clarity, ensuring meaningful participation and consultation with affected farmers, and providing comprehensive resettlement support, including access to housing, employment opportunities, credit, and social services, to help affected farmers transition to new livelihoods.

KEYWORDS

expropriation, valuation, compensation, livelihoods, Addis Ababa, Ethiopia

1 Introduction

Land expropriation refers to the acquisition of land by the government and its agencies, often without the consent of the landowners (FAO, 2009, p. 5; Lindsay, 2012, p. 1). This can harm farmers who primarily rely on the land for their livelihoods. The global landscape is undergoing a profound transformation characterized by rapid urbanization. By 2000, half of the world's population resided in cities and towns, and by 2030, it is estimated that two-thirds of the global population will have become urbanized (Bocquier, 2005; Buettner, 2015). This urbanization trend is particularly pronounced in developing countries, encompassing regions such as Latin America, Asia, and Africa. With Latin America experiencing a 1.7% urbanization rate, Asia 2.3%, and Africa averaging a 3.5% rate of urbanization. These regions will bear the brunt of this high urbanization rate these days and even in the future (Bocquier, 2005; Bocquier and Mukandila, 2011; Kundu and Pandey, 2020).

This rapid urbanization has increased the demand for land, specifically from the surrounding rural and peri-urban areas (Mbiba, 2017a). Subsequently, this urbanization path

often leads to the expropriation of agricultural land from peri-urban farmers (Che and Zhang, 2017; Xie, 2019). This expropriation, aimed at the conversion of peri-urban rural lands for urban use, resulted in far-reaching consequences on the livelihoods of farmers such as losses of income, land tenure, shelter, production, employment, and various socioeconomic and psychological effects (Zheng, 2017; Worku, 2020; Wu et al., 2021).

Empirical studies highlighted the African city's experience of rapid urbanization contributing to their expansion into peri-urban areas (Chirisa, 2008; Mbiba, 2017a; Yamashita, 2017). This trend of rapid urbanization has caused rapid expansion into the peripheral areas. These expansions into urban peripheries caused land expropriation from peri-urban farmers to acquire and supply land for the growing demand ha become a common practice of peri-urban areas of most African cities (Naab et al., 2013; Mbiba, 2017b). This trend entails that compulsory land expropriation is marked by inadequate, inequitable, and untimely compensation payments (Ogedengbe, 2007; Akujuru and Ruddock, 2015; Parker, 2019). For instance in Nigeria, despite the government compensating original landowners for crops, economic trees, and structures, the compensation is often insufficient and is plagued by significant delays, leading to inflationary losses due to devaluation (Nuhu, 2008; Mendie et al., 2010; Gironde et al., 2015). Similar experiences are common in Rwanda, where land expropriation for public purposes is recognized as a means to secure land for governmental development programs, with compensation based on the market value approach (Powell, 2021). Tanzania also witnesses widespread land expropriation for public use, even if actual practices frequently diverge from legal standards related to resident participation and fair compensation based on market values (Mousseau and Mittal, 2011; Makupa, 2020). While in Niger, land expropriation in the urban periphery violates the principles of equivalence, uniformity, and fairness, with government bodies serving as final arbiters and ignoring claimants' opinions. Such a rigid process is aggravated by delays in compensation payments, escalating the overall contentious issue of land expropriation (Akujuru and Ruddock, 2013; Odudu and Iruobe, 2017).

Ethiopia is one of the African countries experiencing rapid urbanization and a growing demand for urban land. But, the country employs expropriation as a primary land acquisition strategy to meet the needs of urban centers (Ambaye, 2015a, p. 12; Alemu, 2016, p. 15; Mezgebo and Porter, 2020; Gemeda et al., 2023). This has led to the expropriation of peri-urban agricultural land for urban development projects (Adam, 2014; Harris, 2015; Ige et al., 2016; Gebremichael, 2017). Indeed, different legal and policy frameworks in Ethiopia allow the government to expropriate land for public purpose developments and the process of expropriation to preceded by an advance payment of compensation (FDRE Constitution, 1995, Article 40(8); Proclamation No 455/2005). According to the 1995 Constitution Article 40/8, proclamation no 455/2005, and the new Proclamation no.1161/2019, stated that expropriations should be for a public purpose and must be preceded by an advanced and commensurate compensation payment to the affected land use right holders. However, in reality, the practice deviates from the intended public purposes, and the compensation is not always adequate to sustain the livelihoods of farmers to their pre-expropriation conditions (Ambaye, 2009; FAO, 2009; Yirsaw Alemu, 2013; Workineh, 2017).

This study is framed by the theories and concepts the sustainable livelihood framework, and the indemnity and takers gain theories of expropriation. As highlighted by Barańska (2017) and Kabanga and Mooya 2022, the indemnity and takers gain theories serve as contrasting perspectives that aid in understanding compensation for expropriation.

The indemnity theory also called the fair compensation theory, serves as a guiding framework for understanding the effects of land expropriation on the livelihoods of farmers. Guided by the principle of just compensation, indemnity theory states that governments should be forced to pay just compensation when they exercise eminent domain to take private land use rights for public development schemes that meet public purposes. The land use rights holders affected by the expropriation should be compensated with the full market value of their lost assets (Admasu et al., 2019; Kabanga and Mooya 2022).

It stresses that governments should adequately compensate for the economic losses that the farmers suffered due to the expropriation to restore their previous livelihoods or resort to alternative livelihood options. Moreover, the government should also mitigate the disruptions that could occur to farmers' livelihoods. The compensation should minimize financial instability by allowing the farmers to shift to alternative job opportunities. The theory also emphasizes the importance of ensuring social justice during the process of land expropriation. Land-lost farmers should not be adversely affected by the losses to their land. Maintaining fairness and equity at times of substantial losses to their livelihoods (Mugisha, 2015; Admasu et al., 2019; Kabanga and Mooya 2022).

While, Taker's Gain Theory suggests a different perspective, emphasizing the advantage the government gets from land expropriation. It argues that, at the time of expropriation, the compensation that the government pays should not necessarily be at the full market value of the lost properties by the farmers; rather, it should be proportional to the government's benefit from the land expropriation. It claims that farmers who lost their land use rights should be compensated based on the government's net benefits to minimize wastage in public resource utilization. For this purpose, compensation should be aligned with the actual gain the government drives from the expropriated land to allocate resources more effectively (Barańska, 2017; Kabanga and Mooya 2022).

It recognizes the need for governments to balance economic development with farmers' livelihoods. It states that excessive compensation could hinder public projects and infrastructure development, which could negatively affect overall economic activities. By linking compensation to the government's improvement, this approach incentivizes strategic land use planning, which can influence how farmers perceive the change. This, in turn, encourages farmers to participate in the process by understanding the benefits that can come from public development projects.

Furthermore, the sustainable livelihood theory holds significance in shaping this study, asserting that the livelihood of inhabitants should be considered across various dimensions. Compensation for expropriation, according to this theory, should encompass diverse losses experienced by landholders, including economic, social, environmental, and psychological aspects (Kabra, 2016; Li et al., 2018; Nkansah-Dwamena, 2021).

Moreover, a comprehensive review of prior studies was undertaken to enhance comprehension and identification of the

study problem, focusing on global land expropriation issues from legal perspectives. For instance (Ambaye, 2015b, p. 58) studied land rights and expropriation in Ethiopia. He assessed the gap between the law and the practice in Ethiopia. Similarly, Abdo (2015) identified the gaps in the expropriation laws in Ethiopia and suggested the need to reform the expropriation law. Whereas Alemu (2016) studied the practices of expropriation, valuation, and compensation in the Amhara national regional state. Based on his findings Alemu suggested a detailed and comprehensive study to be undertaken on the socio-economic effects of land expropriation on the livelihoods of land-lost households in Ethiopia. This indicates that there is a gap in understanding the effects of land expropriation on the livelihoods of affected households. Thus, the previous studies have not fully addressed the scope and perspectives required for investigating the socio-economic effects of land expropriation in Ethiopia particularly in Addis Ababa.

Filling these identified gaps requires a more comprehensive understanding of the effects of land expropriation on the livelihoods of farmers in the expansion areas of Addis Ababa. Based on insights from prior studies, this study endeavors to fill this gap by investigating the practices of land expropriation and its socio-economic effects on the livelihoods of land-lost farmers in Addis Ababa, Ethiopia. Therefore, this study aims to examine the effects of land expropriation on the livelihoods of land-lost farmers in four purposively selected sub-cities in Addis Ababa where much of the city's expansion takes place. The findings of the study provide valuable contributions to the existing literature and offer insights for policymakers, urban administrators, planners, and other stakeholders. This comprehensive understanding will improve the decision-making processes, reform strategies, and policies that improve the implementation of expropriation measures, property valuation for compensation, and resettlement planning. Ultimately, the study aims to minimize losses for farmers affected by government land expropriation measures in Addis Ababa, Ethiopia.

1.1 The legal frameworks of land expropriation in Ethiopia

Currently, Ethiopia is in a state of rapid urbanization related to its fast population growth and rural–urban migration. It is also in a swift socio-economic development which attracted local and foreign investments. Because of this, the demand for land has been growing alarmingly. However, municipalities are incapable of providing land for the growing demand, especially in cities like Addis Ababa (Ozlu et al., 2015).

"In Ethiopia Land is the common property of the state and the people, and, hence, is not subject to sale, exchange, or mortgage" (FDRE Constitution, 1995, Article 40/8). Similarly, the constitution stated that "rural farmers and pastoralists are guaranteed a plot of land free of charge." Whereas "urban residents can secure land use rights through ground lease terms." This indicates that Rural farmers' right to the land is a kind of usufructuary right, which simply gives peasants possessory or holding rights, including the rights to use and enjoy, rent, donate, and inherit the land (Ambaye, 2012; Zerga, 2016).

Whereas in urban areas, residents can obtain land on a year-based lease term depending on the purpose for which the land is required and such right may be freely transferable. To secure such rights, the Constitution prohibits eviction of landholders without just cause and prior payment of commensurate compensation. But as specified in the constitution article 40(3), without prejudice to the right to private property use rights, the government can expropriate private property use rights for public interest subject to payment in advance of compensation commensurate to the value of the property (FDRE Constitution, 1995).

Expropriation, as a means of land acquisition for public purposes, has been a commonly used concept of law since the ancient times of Greece and Rome. It has also been usually applied in practice in Europe and America. In Ethiopia, expropriation was introduced, at least in law, during the era of Menelik II (Ambaye, 2013). Expropriation is mainly understood as the inherent power of the state over its territory under which all owners of property including land exercise their property rights subject to this power of the state called "eminent domain" (Reynolds, 2010; Ambaye, 2013).

Based on the constitutional requirements the Federal government has also designed the Expropriation of Land Holdings for Public Purposes and Payment of Compensation Proclamation No. 455 in 2005 and Regulation No. 135 in 2007 to guide regions and city administrations in implementing land expropriation and compensation fairly and ensuring tenure security. This proclamation is revised and replaced by the new Proclamation No. 1161/2019 with major modifications even if it is not practically implemented during this study.

This law gave the regional states, and the two city administrations, i.e., Addis Ababa and Dire Dawa city administrations, the power to enact directives to better implement the proclamation and the regulation. Based on this, Addis Ababa city administration has enacted directive number 19/2015 which is in use during this study. The respondents of this study were also entertained as per this directive.

The practice indicated that there is an inadequacy of compensation in Ethiopia. It has been observed that the biggest source of the inadequacy of compensation is the outdated rates used during the valuation of compensation and the methods used to determine compensation. Nowadays magazines are putting the compensation issue in their headlines. The case is especially severe when rural lands are expropriated for urban expansion. The surrounding farmers of Addis Ababa have been complaining to different authorities about the inadequacy of compensation and resettlement support given by the city administration during expropriation (GebreEgziabher, 2014; Amera and Habtamu, 2021).

Land expropriation in Addis Ababa follows a structured process, starting from either the land development and management agency or other recognized higher government organs like the city council. Private individuals cannot propose plans due to the lease-based urban land system. Exclusive to government institutions, such as the roads authority and urban renewal agencies authority to propose plans for land expropriation. The implementing agency must provide data on the proposed land and its location to the land development and management agency a year before the project's inauguration, as per Proclamation No 455/2005. These provisions are actively implemented, to ensure a transparent and systematic approach to land expropriation in the city within a defined legal framework.

2 Materials and methods

2.1 The study area

This study is conducted in Addis Ababa which is the socio-economic and political center of Ethiopia. Addis Ababa is located at 9°1′48″N latitude and 38°44′24″E longitude with a total area of 540 square kilometers. It also serves as the headquarters of the African Union, the United Nations Economic Commission for Africa (UNECA), and numerous other continental and international organizations (Wubneh, 2013).

The population in the city is growing very fast like many African cities and it is also projected to double within 10–15 years (Central Statistical Agency, 2013). Economically, the city is considered the engine of the country's economic, social, and political activities. These days the city is growing very rapidly contributing about 50% of the country's national GDP alone (Central Statistical Agency, 2013).

The city has three layers of government structure, the city administration, sub-cities, and Woredas. It is classified into 11 sub-cities which are the second administrative layers just below the city administration. In terms of areal coverage, Bole was the largest sub-city followed by Akaki-Kality and Yeka. While "Addis-ketema" is the smallest followed by Lideta and Arada Sub-cities. The sub-cities are also subdivided into woredas, which are the smallest administrative units in the city. There are about 116 woredas in the city administration. The number of woredas fluctuates based on their size (Central Statistical Agency, 2013). For this study, four sub-cities (namely Yeka, Bole, Akaki-Kality, and Nifas-Silk Lafto) were selected purposively since much of the city's expansion takes place in these sub-cities and most of the expropriated farmers are also from these sub-cities. Figure 1 is a Map of the study area, which shows the four sub-cities that are purposively selected for this study.

2.2 Research approach and methods

This study employed a mixed research approach and survey research strategy to analyze the implication of land expropriation on expropriated farmer households' livelihoods in four purposively selected sub-cities of Addis Ababa, Ethiopia. The mixed research approach helps to gather diverse data types from various sources to mutually reinforce one another and enhance the overall reliability of both the research data and subsequent findings (Kothari, 2004; Creswell and Clark, 2017; Sardana et al., 2023).

2.3 Samples and sampling techniques

The purpose of the study is to examine the effects of land expropriation on the livelihoods of expropriated farmer households in Addis Ababa, Ethiopia. The study began by purposively selecting four sub-cities situated in the expansion districts of Addis Ababa, namely Yeka, Bole, Akaki-Kality, and Nifas Silk Lafto. These areas were selected due to their significant expropriation activities affecting a substantial number of farmers. Subsequently, specific samples were selected from each of these sub-cities. In Yeka, samples were selected from Woredas 12 and 13, while in Bole, from Woredas 10, 11, and 12. Similarly, in Akaki-Kality, samples were drawn from Woredas 9 and 10. In Nifas Silk Lafto, samples were taken from Lebu 01 and Jemo 01 Woredas. The selection process ensured proportional representation from each sub-city, enabling a comprehensive analysis of the effect of land expropriation across different areas of Addis Ababa's expansion areas (Table 1). Subsequently, as per the data obtained from the city's farmers' rehabilitation and urban agriculture project office (FRUAPO) in 2020 indicated, there are a total of 5,891 expropriated farmer households in the four selected sub-cities which are taken as the target population for this study (Table 1). Table 1 indicates the number of expropriated farmers and the proportional samples selected for the study.

Then, using Kothari's (2004) sample size calculation formula with a confidence level of 95%, a probability error of 5%, and an estimated proportion of the population, 362 household heads were proportionally selected using systematic random sampling from the four sub-cities. Finally, 349 completed survey questionnaires were collected and used for this analysis.

2.4 Data sources and methods of data collection

Both primary and secondary data sources were used to gather data for this study. The Primary data was collected from the sample expropriated farmer households, key informants, and FGD participants using survey questionnaires, interviews, FGDs, and field visits. To supplement and validate the primary data, secondary data sources were also used to collect data from both published and unpublished sources such as reports from the city's farmers' rehabilitation and urban agriculture project office (FRUAPO), city, sub-city, and woreda level land development and management offices, review of legal documents like the FDRE constitution, proclamations, and regulations.

Two Focus Group Discussions (FGDs) were conducted, involving eight expropriated farmers participants from elders, women, and youths. The purposive sampling technique was employed to identify participants who are relocated and get them through contacts at the Bole and Nifas-Silk Sub-cities. Purposive sampling is a chain-referral method within a respondent population, where individuals refer potential study informants whom they know until information saturation is achieved. This method assists researchers in reaching study respondents which is challenging to get them directly (Kothari, 2004; Worku, 2020). A checklist was used during the FGDs to gather qualitative data, providing detailed insights and cross-checking the information attained through the survey.

On the other hand, 16 key informant interview participants were also selected purposively. They were nominated based on their knowledge of the issue, understanding of the process and practice of land expropriation, and their exposure to the effect of land expropriation. Purposive sampling is a deliberate non-probability sampling method used to select specific key and knowledgeable respondents aligned with the stated research objectives (Kothari, 2004; Singh and Masuku, 2014). The key informant interviews (KIIs) were conducted to collect insights on policy and legal aspects, the implementation of land expropriation, and the socio-economic effects on farmers. The interview sessions took place from March 7 to 18, 2021, in offices and hotels, selected locations based on their preference and convenience.

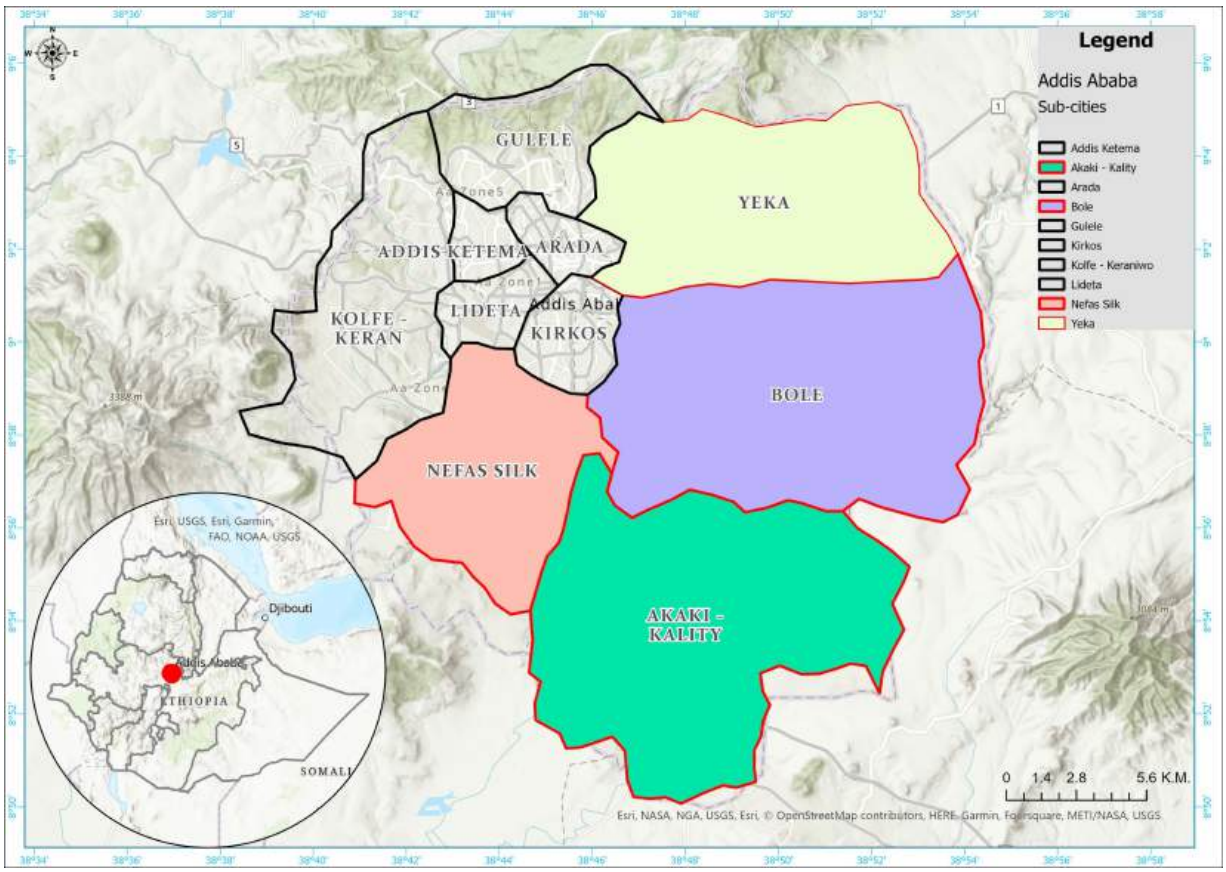

FIGURE 1
Map of the study area.

TABLE 1 The number of expropriates farmer HHDs by sub-city.

S/N°	Sub-cities	Target Population	Samples
1	Yeka	838	52
2	Bole	2,089	128
3	Akaki-Kality	1,410	87
4	Nifas-Silk Lafto	1,554	95
	Total	5,891	362

Source: Addis Ababa City Administration (FRUAPO) (2020).

Moreover, the study also used time series Global Land Cover and Land Use Change (GLAD) datasets for the city. This land use and landcover change data was taken from Potapov et al. (2022) and is available at: (https://doi.org/10.3389/frsen.2022.856903). This data was used to see the land use land cover change in the city from 2000 to 2020. The land use land cover change was analyzed using GIS mainly to see the rapid conversion of agricultural land use into built-up areas in the expansion areas of the city.

2.5 Methods of data analysis

Quantitative data obtained from the survey was analyzed through descriptive statistics using SPSS version 24. This analytical approach allowed for the examination of key parameters and trends within the dataset. Meanwhile, qualitative data derived from key informant interviews (KIIs) and Focus Group Discussions (FGDs) were analyzed using qualitative analysis techniques, enabling a deeper exploration of themes, perspectives, and narratives. These qualitative insights were then integrated with the quantitative findings to provide a comprehensive understanding of the research topic through triangulation. The primary data collected was supplemented by secondary information gathered from various sources, enriching the analysis and interpretation of the findings. Additionally, the spatio-temporal changes in land use and land cover were assessed using Geographic Information Systems (GIS), leveraging time series data from the Global Land Cover and Land Use Change (GLAD) datasets for the city. The results of the analysis were synthesized and presented using statistical tables, graphs, and spatial visualizations, facilitating a clear and informative representation of the study results.

3 Results and discussion

3.1 Background of the expropriated farmer respondents

The study's demographic analysis revealed that a substantial majority of respondents were male, constituting 67% of the sample, while female-headed households accounted for approximately 33%. In terms of age

distribution, the findings indicated that the majority (57.3%) of respondents fell within the 30–60 age range, signifying an economically active and energetic segment of the population. Conversely, 42% of respondents were aged above 60, indicating a less economically active group less likely to engage in the competitive urban employment market. Consequently, this group requires direct support from the city administration, such as monthly allowances to cover basic needs and house rent.

Moreover, the study found that over 80% of the expropriated farmer respondents were from married households, while singles, divorced, and widowed families collectively represented less than 20%. This demographic characteristic of the respondents indicates the need for tailored support measures to address the diverse needs of affected households, particularly those led by individuals in less economically active age brackets.

The study also observed the educational background of the respondents, revealing significant disparities in educational attainment. A notable proportion (36.9%) of respondents had completed secondary education or below, indicating a limited level of formal education. Additionally, 36.4% of respondents were categorized as illiterate, having received no formal education, while 9.5% possessed basic literacy skills, capable of reading and writing. Surprisingly, only 17.1% of respondents held certificates, diplomas, or degrees, suggesting a minority with higher levels of education. This educational profile validates the prevalence of a low-educated demographic among the sample of expropriated farmers. Therefore, their limited educational attainment hindered their ability to secure employment opportunities in the city after the expropriation, thereby impeding their capacity to generate income and adapt to the demands of urban life. Addressing the educational needs of these individuals is essential to assist their transition to alternative livelihoods and enhance their socio-economic restoration in the face of land expropriation.

The urban job market presents tough challenges for uneducated and unskilled expropriated farmers, limiting their prospects of finding new employment opportunities. Their lack of formal education and specialized skills limits their access to various industries and sectors that require specific qualifications as previous studies by Mteki et al. (2017) and Xie (2019) concluded. Without the necessary educational credentials and professional networks, which are crucial for job referrals in urban areas, such individuals encounter significant difficulties in securing employment. Studies by Srivastava (2018) and Xie (2019) have highlighted how the skills possessed by expropriated farmers often do not align with the demands of available job opportunities in urban areas. Consequently, they face considerable difficulty in competing in the labor market, particularly against job seekers with higher levels of education and skills. This mismatch between the skills of expropriated farmers and the requirements of urban jobs implies a significant barrier to their employability. Furthermore, the studies of Tetteh (2011), and Tuan (2021a,b), also confirmed that expropriated farmers confront intense competition from more qualified candidates, and further complicating their job search efforts exacerbating their socioeconomic challenges in the aftermath of land expropriation.

3.2 Socio-economic effects of the land expropriation

Land expropriation in urban peripheral areas in the name of public purposes significantly affected farmers, leading them to profound social and economic losses (Cernea, 2004; Kasa et al., 2011). The dislocation resulting from land expropriation transcends into an immediate loss of income for farmers who are highly dependent on their agricultural activities. The insecurity of land tenure rights disrupts their long-established livelihoods and obstructs long-term investments and sustainable assets. Housing and shelter losses arise as forced relocation often leads to inadequate living conditions. Socially, urban peripheral farmers get fragmentation and destroy essential social support networks. Psychologically, the stress and uncertainty associated with land expropriation can affect health stability. Inadequate compensation and resettlement support worsen the economic difficulties faced by expropriated farmers.

As the city expands into peri-urban areas through a series of expropriations, including incorporation into the master plan, and reallocation through lease contracts, farmers in these areas face constant fear of eviction. The process of expropriation has led to the dislocation of a considerable number of farmers, causing disruptions in urban peripheral communities (Adu-Gyamfi, 2012; Harris, 2015).

Concerns about the fairness of expropriation arise from the lack of mechanisms to convert land rights from rural to urban during urbanization. Interviews and discussions reveal that farmers dislocated by expropriation are compensated inadequately a situation criticized for being heavy-handed and biased against farmers (Ozlu et al., 2015).

> *"…. The amount of compensation paid to the farmers and the lease price that the government uses to transfer the land to developers are quite different. The compensation paid for us is 82 birr per square meter but the government is leasing a square meter of land for thousands and hundreds of thousands of birrs. If the land is owned by the state and the people as stated in the constitution jointly, the government has to share the lease value with the displaced landholder or at least has to improve the compensation rate as per the market situation to compensate us fairly."* (A KI farmer who lost his land by expropriation, May 8, 2020).

For instance, compensation payments by Addis Ababa city administration on average is 190 ETB/m2, compared to the informal market value, which ranges from 1,200,000 to 1,800,000 ETB/m2. This huge difference between government compensation and informal market land value, as well as delays during compensation payment, forced the farmers to sell their farmland in the informal market without legal consent ahead of expropriation at lot compensation (Ozlu et al., 2015).

The focus group participants raised that the inadequacy of compensation and rehabilitation support for displaced farmers caused a serious survival problem for us. Our attention is not on the government act of expropriation, our focus is on the amount of compensation and resettlement support provided by the city administration. Since the compensation paid to us is very low and not enough to restore our livelihoods even to our previous situations.

The socio-economic effects of the land expropriation on the livelihoods of land-lost farmers in peri-urban expansion areas of Addis Ababa are broadly discussed as follows;

3.2.1 Loss of income

The loss of income stands out as a prominent socio-economic repercussion following land expropriation, particularly affecting peri-urban farmers. This significant adverse effect underscores the

TABLE 2 Change in income of respondents after expropriation.

Income	Before expropriation		After expropriation		Change (%)
	N	%	*N*	%	
<20,000	19	5.4	98	28.1	+22.7
21,000–30,000	196	56.2	93	26.6	−29.6
31,000–40,000	132	37.8	109	32.9	−4.9
>40,000	2	0.6	49	14	+13.4

Source: Own survey (2021).

TABLE 3 Change in employment of respondents after expropriation.

Before expropriation			After expropriation		
Emp. status	*N*	%	Emp. status	*N*	%
Only agriculture	185	53	Unemployed	115	33
Agriculture and related	162	46.4	Employed	86	24.6
Unemployed	2	0.6	Temporary jobs	148	42.4

Source: Own survey (2021).

profound economic upheaval experienced by these communities upon the expropriation of their land.

The finding indicated that Table 2, a significant portion (45.5%) of the expropriated farmers' income decreased after the expropriation implying the adverse economic consequences that expropriation has on a considerable number of land lost farmers. Before expropriation, the annual income for the majority (56.2%) of the respondents ranges between 21,000 and 30,000 EBR. While 37.8% earn, an annual income ranging from 31,000 to 40,000 EBR. It was only 5.4% of the respondents earned less than 20,000 EBR. Respondents with an annual income of more than 40,000 EBR before the expropriation was only 0.6%. Table 2 indicates the change in income of respondents after the expropriation.

Before expropriation, it was only 19 (5.4%) of the respondents who earn less than 20,000 EBR annually. But, after expropriation, the proportion increased by 22.7% to 98 (28.1%). This implies declining chances of generating income after the loss of their land and related assets by expropriation. Similarly, the proportion of farmers who earn 21,000–30,000 EBR before the expropriation has declined by 29.6% from 196 (56.2%) to 93 (26.6%). While those who earn 31,000–40,000 EBR also decreased by 4.9% from 132 (37.8%) to 109 (32.9%). Fortunately, the number of farmers who earn more than 40,000 EBR has shown an increase of 13.4% from 2 (0.6%) to 49 (14%).

The decrease in income for the majority of respondents, particularly those in the middle-income group, indicates the economic losses and disruptions faced by the expropriated farmers in the post-expropriation period. The contributing factors to the income changes include the loss of land and assets, changes in livelihood opportunities, the inadequacy of compensation, and the overall impact of the expropriation on local economies and livelihoods. Thus, the finding indicates the complex and diverse effects of land expropriation on the income of expropriated farmers, implying the need for comprehensive resettlement supports and mitigation strategies to address the socio-economic losses that happened because of land expropriation.

> *During a focus group discussion conducted in the "Bole Arabssa" area, participant farmers expressed the profound negative effect of land expropriation on their income. Participants unanimously mentioned the significant decline in their earnings following the expropriation of their land. Before the expropriation, agriculture, and related activities served as the primary source of income for the majority of the farmers. However, with the loss of their agricultural land, their main source of livelihood was stripped away, resulting in a complete loss of income. This loss has left farmers grappling with the economic effects of land expropriation, highlighting the critical need for effective measures to address the financial hardships faced by affected communities.*

Similarly, previous studies conducted by Le and Nguyen (2020) in Vietnam, Pham Thi et al. (2021), and Nikièma (2013) indicated consistent patterns of income change among land-expropriated farmers in peri-urban regions of developing countries. Moreover, studies by Ige et al. (2016), Oduro (2010), and Otubu (2012) in Ghana and Nigeria revealed similar trends of income decline experienced by households subjected to land expropriation. These findings show the widespread and lasting challenges faced by affected communities in sustaining their livelihoods in post-land expropriation periods, suggesting the importance of planned interventions to mitigate economic hardships and support sustainable livelihoods in these contexts.

3.2.2 Loss of employment

As illustrated in Table 3 the majority of the respondents, 99% were fully engaged in agriculture and agriculture-related activities before the expropriation. But, it was only 1% who had no job before expropriation. Following the land expropriation, there is a notable shift in the employment status of the respondents. A significant number of farmers became unemployed after the expropriation, while others engaged in temporary jobs. This implies that the expropriation affected farmers' ability to maintain their livelihoods through traditional agricultural activities as before.

However, after the land expropriation and resettlement, there was a paramount shift/change in the farmers' employment. The proportion of unemployed farmers increased by 33%. While 42.4% shifted into temporary jobs that generate very low income. Whereas, 24.6% of the respondents who have better education status become permanently employed and earn better income than their previous situation. The decrease in the number of respondents engaged solely in agriculture after expropriation suggests a shift in employment patterns among the affected farmers. The increase in the unemployment rate post-expropriation indicates potential challenges faced by the displaced farmers in finding alternative sources of income. The rise in temporary jobs could be attributed to various factors such as government-sponsored employment programs, seasonal agricultural work, or informal labor opportunities.

Due to the expropriation, a farmer who was formerly engaged in agriculture explained that;

> *"… when I completely lost my land, I lost my employment too. Subsequently, I taught myself to work as a daily laborer, driven by the need to secure any available work that provides income to sustain my family. But still, it is insufficient to meet even the basic needs of my family. What worsens the challenge to me is that I have no formal education and any skill, which hinders me ing fromcompeting for employment opportunities in the new urban setting that emerged post-expropriation …."* (Interviewed on March 10, 2021, in Nifas Silk Lafto Sub-city, Addis Ababa).

The findings of Xie (2019) and Tuan (2021b) in Vietnam and Tagliarino et al. (2018) in Nigeria also reinforce this finding stressing the implication of land expropriation on the employment of agricultural-dependent peri-urban farmers.

The findings of Xie (2019) and Tuan (2021a,b) in Vietnam, along with Tagliarino et al. (2018) in Nigeria, indicated the significant implications of land expropriation on the employment prospects of agricultural-dependent peri-urban farmers. These studies showed the widespread nature of the challenges faced by farmers in peri-urban areas affected by land expropriation, regardless of geographical location or socio-economic context. Specifically, they underlined the adverse effects of land expropriation on farmers' ability to sustain their livelihoods through agricultural activities, as their land and associated assets are compulsorily expropriated. This disturbance to agricultural employment not only weakens the economic stability of affected farmers but also exacerbates existing vulnerabilities, perpetuating cycles of poverty and socio-economic marginalization. By drawing parallels between findings from different regions, these studies highlight the need for context-specific interventions that address the employment-related challenges ascending from land expropriation, thereby promoting comprehensive and sustainable development consequences for affected communities.

3.2.3 Loss of land and food self-insufficiency

Land expropriation can also cause food self-insufficiency when farmers who lose their land become dependent on food aid or imports. This can lead to food insecurity and malnutrition, especially in regions where food production is already limited. Similarly, a study by the Tuan (2021a,b), and Pham Thi et al. (2021) confirmed that land expropriation can also lead to the loss of traditional agricultural knowledge and practices, which can affect the long-term sustainability of food production. Mabe et al. (2019) also found that land expropriation affects production, as farmers who lose their land may not have access to the necessary resources and inputs to produce crops or raise livestock. This can lead to a decrease in agricultural productivity and food production.

In an interview on March 8, 2021, an expropriated farmer shared with me the condition of his life before and after the expropriation of his land as follows;

> *"…. In the past, I was actively engaged in the cultivation of crops, raising of animals, and cultivation of fruits and vegetables, a livelihood that generates a substantial income. However, due to the expropriation, my once-thriving source of sustenance has been taken away. The effect has been severe, now I am struggling to provide even necessities for my family and am unable to generate any income. The loss of my productive land has pushed me into a state of food insufficiency, creating a shocking contrast to the comfort that once I enjoyed. Currently, I rely solely on a monthly allowance provided by the government for survival. Unfortunately, this allowance falls significantly short of covering the essential expenses for my family, dropping me into a critical state of poverty."*

This personal narrative indicates the devastating effect that the land expropriation brought on an individual's livelihood and the challenging circumstances faced by those who struggle with the post-expropriation. The decrease in agricultural land use in comparison to the rapidly growing built-up areas in the city is illustrated in Figure 2 below briefly.

As illustrated in Figure 2, the land use land cover of the city completely changed in the past 20 years from 2000 to 2020. The built-up area is increasing significantly while the agricultural land is decreasing continuously indicating land use conversion, particularly from agriculture into residential and commercial uses through expropriation from farmers in the peripheral areas of the city which is affecting the farmers' livelihoods. Table 4 also details the land use change mainly from agricultural to the built-up area of the city from 2000 to 2020.

The change in Addis Ababa's land use over the past two decades, as shown in Figure 2 and detailed in Table 4 above, is considerable. In 2000, the city's built-up area covered 23370.8 hectares, constituting 44.92% of the total land area. By 2020, this figure had increased to 36521.1 hectares, representing an overwhelming 70.19% of the total land area. The subsequent change from 2000 to 2020 indicated a notable increase of 13150.3 hectares, accounting for 25.27% of the total change.

On the other hand, in 2000, agricultural land covered 17075.5 hectares, containing 32.82% of Addis Ababa's total land area. However, by 2020, it had declined to 8793.42 hectares, occupying just 16.90% of the city's land. This substantial reduction of 8282.08 hectares, amounting to 15.92% of the total change, shows a significant change of agricultural land to other land uses particularly built-up areas (Table 4).

This shift is an indication of deliberate urban development strategies employed by the city administration, involving land expropriation to facilitate many development projects such as low-cost housing initiatives, industrial parks, and infrastructure expansion. The prioritization of urban expansion over agricultural land utilization underscores the city's evolving socio-economic priorities and the challenges posed by rapid urbanization. This trend of urban growth in the city has caused a critical socio-economic crisis on land lost farmers in the surrounding related to land expropriation measures.

3.2.4 Livelihood change, disruptions and dissatisfaction

As studies showed one of According to FAO (2009) and Worku (2020), land expropriation often precipitates a significant change in the livelihoods of affected farmers, which can manifest either positively or negatively depending on various factors such as their pre-existing socio-economic conditions and the availability of post-expropriation job opportunities. The findings of this study reflect this complexity, with a notable proportion (40.7%) of expropriated farmers reporting a worsening of their livelihoods following land expropriation. Additionally, 29.8% of respondents indicated that their livelihood conditions remained unchanged compared to pre-expropriation circumstances. Conversely, 29.5% of farmers

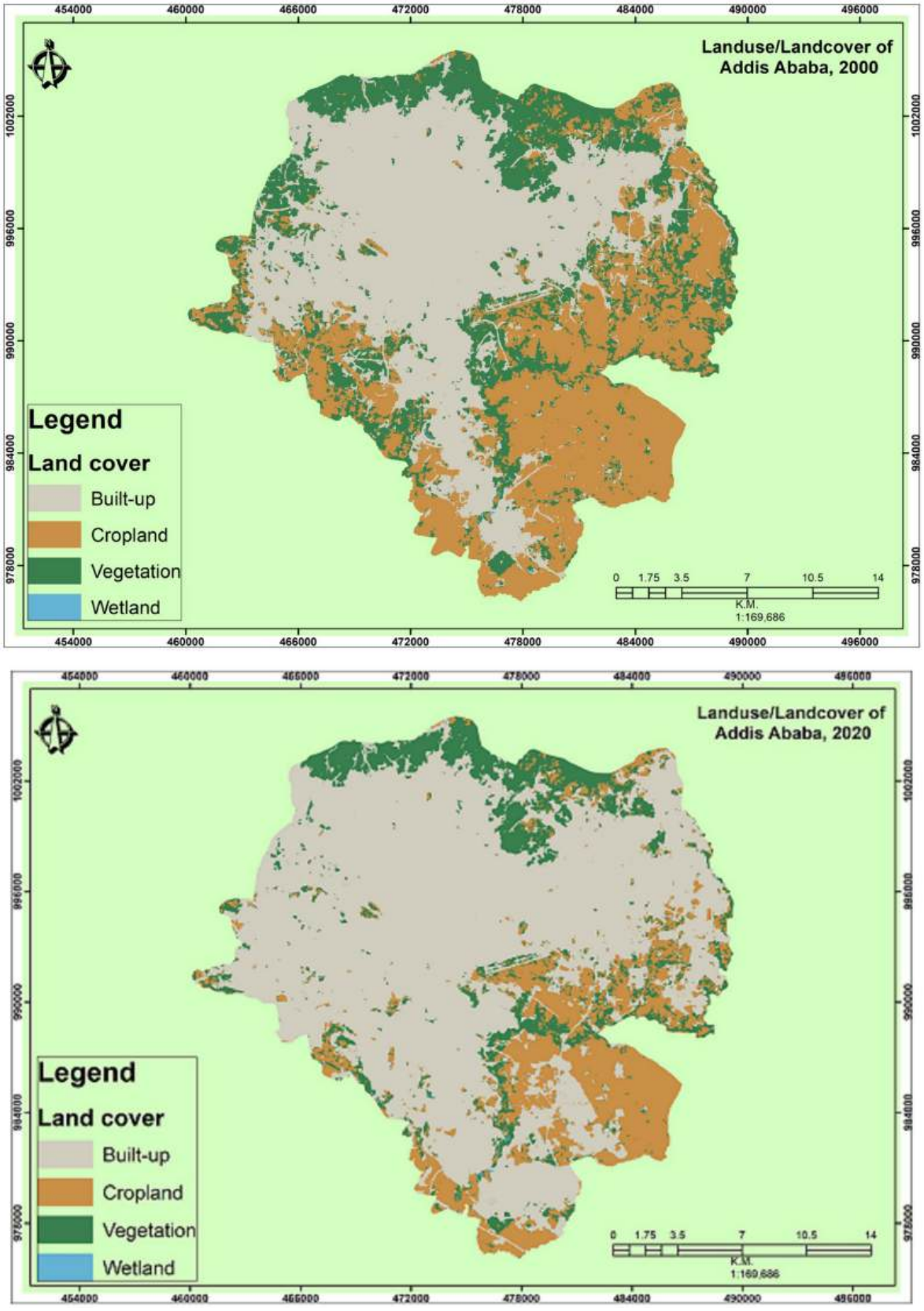

FIGURE 2
Agricultural land use change in Addis Ababa (2000–2020).

TABLE 4 The land use change of Addis Ababa (2000–2020).

LULC types	2000		2020		Change 2000–2020	
	(ha)	%	(ha)	%	ha	%
Built-up	23,370.8	44.92	36,521.1	70.19	13,150.30	25.27
Agriculture	17,075.5	32.82	8,793.42	16.90	−8,282.08	−15.92

TABLE 5 Change in livelihood and satisfaction of respondents.

Attributes	Categories	Frequency	Percent
Livelihood change	Improved	103	29.5
	Worsened	142	40.7
	Unchanged	104	29.8
Livelihood satisfaction	VS and satisfied	80	23
	Neutral/somewhat	121	34.7
	Dissatisfied and VD	148	42.3

Source: Own survey (2021).

observed an improvement in their livelihoods post-expropriation, particularly those with higher levels of education and knowledge who experienced increased income due to enhanced employment opportunities and personal businesses.

The disruption caused by land expropriation extends beyond mere economic implications, profoundly impacting the livelihoods of farmers who predominantly rely on agriculture for sustenance. As agricultural-dependent communities, these farmers experienced severe disturbance as their homes, cropland, and other sources of income were forcibly taken away. The subsequent dislocation and loss of income sources often dive affected farmers into poverty, exacerbating their already precarious situation. Consequently, land expropriation emerges as a fundamental factor in destabilizing the socio-economic fabric of the farming communities, necessitating comprehensive support mechanisms to alleviate the adverse effects and facilitate sustainable livelihood transitions.

Studies conducted by Oduro (2010), Feldman and Geisler (2013), and Le and Nguyen (2020) have consistently highlighted the detrimental impact of land expropriation on poverty rates in various countries, including Ethiopia, Mozambique, and Zimbabwe. These findings underline the broader socio-economic implications of land expropriation beyond immediate dislocation and loss of assets, with poverty emerging as a significant consequence affecting affected communities.

The effects of land expropriation on the livelihoods and satisfaction of expropriated farmers are presented in Table 5, which delineates changes in their livelihoods and subsequent satisfaction levels post-expropriation. The table provides insights into the nuanced experiences of farmers following land expropriation, indicating the diverse ways in which their livelihoods have been affected by the process. By examining indicators such as livelihood change and satisfaction, the table offers a comprehensive understanding of the multifaceted impacts of land expropriation on affected individuals, thereby informing targeted interventions and policy responses aimed at mitigating adverse effects and promoting sustainable livelihood outcomes.

Table 5 illustrates the changes in the livelihoods and satisfaction levels of respondents following the land expropriation process. A significant portion, representing 40.7%, reported a worsening of their livelihoods due to the loss of land and associated assets. Conversely, 29.5% noted an improvement, primarily attributed to new opportunities in employment, small-scale business activities, and improvements in access to services and facilities such as health, education, transportation, bank, electricity, and water. Nearly 30% of the respondents indicated no significant change in their livelihood situation in the post-expropriation.

In terms of satisfaction with their current livelihood, only 23% expressed contentment, while the majority, i.e., 42.3% reported dissatisfaction. The remaining 34.7% opted for a neutral stance or showed uncertainty toward their post-expropriation livelihood situation.

The focus group discussions provided valuable insights into the underlying factors contributing to the respondent farmers' dissatisfaction with the compensation process. The discrepancy between the assessed market land value and the compensation amount the government pays, coupled with delays in payment and a lack of transparency as well as active participation in the valuation process, emerged as the key sources of frustration for expropriated farmers. These findings highlight the importance of addressing these gaps to ensure a fair and equitable compensation payment that supports farmers in transitioning to alternative livelihoods effectively.

3.2.5 Loss of landholding right and displacement

The effect of land expropriation on rural and peri-urban farmers extends beyond mere economic losses, significantly affecting their shelter, landholding rights, and overall socio-economic well-being. The group discussions revealed that farmers experienced dislocation and loss of property rights due to the expropriation, leading to serious litigations and disputes with the administration. These challenges were aggravated by the inadequacy of compensation payment and a lack of consultation or consent from the affected farmers.

Empirical studies by Patel and Mandhyan (2014) and Shaw and Saharan (2019) corroborate these findings, highlighting the negative repercussions of land expropriation, including displacement, loss of livelihoods, and destruction of social networks. Additionally, limited compensation and restricted access to resources contribute to increased poverty among affected communities, highlighting the need for careful consideration of the effects of the expropriation policies and adequate support for affected individuals.

The study demonstrates that land expropriation in peri-urban areas significantly changes the socio-economic landscape for farmers, leaving them landless, jobless, and socially disintegrated. The compensation provided by the city administration, while intended to mitigate the losses, is often insufficient to restore livelihoods to pre-expropriation levels or improve overall conditions. Consequently, many farmers express dissatisfaction with the compensation received and their post-expropriation living conditions. Particularly, older farmers find themselves in precarious situations, requiring direct government support in the form of allowances and subsidies to sustain their livelihoods. Younger farmers demand the government to create jobs and other

opportunities that assist them in securing their economic futures. Overall, the effects of land expropriation highlight the complex and multifaceted challenges faced by affected communities, necessitating comprehensive policy interventions to address their needs and ensure equitable outcomes.

4 Conclusion

The study examined the significant socio-economic effects of land expropriation for urban development projects on farmer's livelihoods in selected expansion areas in four sub-cities of Addis Ababa, Ethiopia. Extensive use of expropriation as a land acquisition mechanism by the city administration to meet the increasing demand for land for development projects has led to the loss of land, employment opportunities, crop production, and overall livelihoods among affected farmers.

Moreover, the process of expropriation was challenged by a lack of transparency, inadequate consultation with affected communities, and insufficient compensation mechanisms. To address these issues, it is recommended to enhance transparency and consultation, improve compensation mechanisms, strengthen legal frameworks, support alternative livelihoods, and promote sustainable development practices.

By implementing these recommendations, policymakers and stakeholders can mitigate the adverse effects of land expropriation and promote more inclusive and sustainable development However, this study's limitation lies in its focus only on the four selected areas in Addis Ababa. Thus, it lacks a comparative analysis of practices in different cities in Ethiopia. Future studies should go deeper into exploring alternatives to land expropriation for urban development, to minimize its adverse effects.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Ethical review and approval was not required for this study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

YA: Conceptualization, Writing – original draft, Writing – review & editing, Supervision. BA: Conceptualization, Supervision, Writing – review & editing, Writing – original draft, Methodology, Validation.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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