



Addis Ababa University

College of Technology and Built Environment

School of Built Environment

Department of Urban and Regional Planning

**The Role of Migration in Driving Urban Horizontal Expansion: The Case of
Woldia Town, North Wollo Zone, Amhara Region, Ethiopia**

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May, 2025

Addis Ababa, Ethiopia

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**A Dissertation Submitted to the College of Technology and Built Environment,
Addis Ababa University, in Fulfillment of the Requirements for the Degree of
Doctor of Philosophy in Urban and Regional Planning**

May, 2025

Addis Ababa, Ethiopia

Declaration

I, the undersigned, certify that this is my original work, which has never been presented at this or any other university and all materials and resources utilized for the dissertation have been properly cited.

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

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This is to certify that the dissertation prepared by Mulu Fasigo Fente, entitled: “The Role of Migration in Driving Urban Horizontal Expansion: The Case of Woldia Town, North Wollo Zone, Amhara Region, 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

The Role of Migration in Driving Urban Horizontal Expansion: The Case of Woldia Town, North Wollo Zone, Amhara Region, Ethiopia

Ethiopia is still one of the least urbanized nations in the world, despite the fact that many of its urban areas including Woldia, are expanding quickly. Due to its rapid horizontal expansion, Woldia has recently encountered major urban challenges. A significant problem linked to this expansion is the growing demand for urban land and space, which is primarily caused by migration-related population pressure. The annexation of agricultural land at the rural periphery as a result of this migration has further contributed the town's horizontal growth. Development in both rural and urban areas is impacted by migration. This has been significant challenges to Ethiopia's development in general and Woldia's urban growth in particular in recent years. The study aims to identify the main drivers and effects of migration, as well as the contribution of remittances to the horizontal growth of Woldia, and evaluates the trends of land use and land cover changes of the town from 2000 to 2020. To achieve the study's objectives, information was gathered from a randomly selected sample of 395 respondents using questionnaires. Besides, interviews, focus group discussions, personal observation, and GIS tools were employed. Secondary data sources were also used and both qualitative and quantitative analyses were employed. Apart from the utilization of percentages, tables, and averages, the discussion was enhanced by the use of diagrams and photographs. The results show that the main driving forces behind migration are inadequate social services and poverty in the places of origin of migrants. On the other hand, the primary pull factors are better social infrastructure and employment prospects at the destination. As a result, peri-urban areas where housing supply and accessibility are still limited are under a lot of strain due to the migration inflow. Additionally, the findings indicated a disparity in socio-economic development between rural and urban areas. The result showed that there was remittance-driven spatial growth at the periphery. Additionally, the LULCC findings showed that migration-driven population growth alters the town's land use patterns with a decrease in agricultural, forest, and barren lands, and an increase in built-up areas which has a significant impact on the prime agricultural land nearby. As a result, migration has driven the town's horizontal expansion in the peri-urban areas by increasing its population which consequently creates more space for various socio-economic developments. It is remarked that without a workable and suitable policy solution in place, the town's horizontal expansion cannot be reversed in the future. Therefore, planners and policymakers at the local, regional, and national levels must have a thorough understanding of the dynamics of the growth occurring in order to effectively support migrants. Furthermore, in the context of fast urban population growth, effective urban expansion planning should be employed to build inclusive, productive and orderly urban areas by allowing space for additional urban inhabitants at the appropriate scale in places where migrants are likely to dwell.

Key Words: Driving, Horizontal Expansion, Migration, Remittance, Woldia

PUBLISHED ARTICLES AND SUBMITTED MANUSCRIPT

1. Published Articles

1.1 From Origin to Destination: Examining the effects of migration on Woldia growth and surrounding migrant sending areas in Ethiopia. Submitted to Geo Journal (SPRINGER) by Mulu Fasigo Fente, Birhanu Girma Abebe (Dr.) & Mintesnot Gebeyehu Woldeamanuel (Professor).

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2. Submitted Manuscript

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ABBREVIATIONS AND ACRONYMS

ADB	Africa Development Bank
CSA	Central Statistical Authority
DESA	Department of Economic and Social Affairs
EC	Ethiopian Calendar
FDI	Foreign Direct Investment
GIS	Geographic Information System
GPS	Global Positioning System
HA	Hectares
IMF	International Monetary Fund
Km	Killo Meter
KNOMAD	Global Knowledge on Migration and Development
LULC	Land Use and Land Cover
MOFED	Ministry of Finance and Economic Development
NBE	National Bank of Ethiopia
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
UN	United Nations
UNCHR	United Nations High Commissioner for Refugees
UNCTAD	United Nations Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
USD	United State Dollar
WB	World Bank
WDU	Woldia University
WEF	World Economic Forum

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Human dynamics have been significantly impacted by migration since the dawn of time (Faist, 2016). Furthermore, migration has gained more attention than at any other time in human history among politicians, policymakers, the media, and citizens of both rich and developing nations in recent years (Zerihun, 2020). In keeping with this, Badolo (2020) claimed that migration is a complicated topic that has attracted the attention of numerous governments and professionals.

Migration dynamics are the patterns, causes, and effects of human movement across geographic boundaries that are influenced by a complex interaction of environmental, political, and socio-economic factors (UNDESA, 2020). Migration is the demographic process of people relocating permanently or quasi- permanently from one environmental area to another based on their requirements or preferences (Kefelegn, 2020). One phenomenon that is impacted by demographic and socio-economic shifts is human migration, which is also one component of population dynamics (Ketema & Diriba, 2021).

Migration in the modern era is driven by several different factors. People are being displaced more frequently by environmental stressors including droughts, floods, and land degradation, especially in areas like sub-Saharan Africa that are sensitive to climate change (IPCC, 2022). Mass displacement is also a result of conflict and political instability, as is the case in Syria, Sudan, and Ukraine. Economic inequality continues to be a major factor, as people migrate in search of better employment opportunities, healthcare, or educational opportunities (World Bank, 2023). Social networks and diaspora ties also help with migration by lowering the expenses and risks for potential migrants (Massey et al., 1993). Many times, these factors combine to produce complicated migratory paths. For instance, rural households threatened by climate change may relocate to urban areas only to experience urban poverty, thus sustaining cycles of vulnerability.

The increasing number of people live in urban areas is a result of both the overall expansion in the human population and the continuing migration of individuals from rural to urban areas (Clement et al., 2021). Furthermore, UNDESA (2020) reported that the predominant form of internal migration specifically, flows from rural to urban areas continue to alter the demographic and geographic landscapes of urban areas. Over the past few centuries, one of the biggest changes in human life has been the rise in the population of urban areas (Perry et al., 2022). According to Aerni (2016), migration will be a significant factor in determining the demographics of urban regions in the

twenty-first century, developing nations' urban settings will unavoidably be shaped and altered by internal migration.

Given that migrant flows occur both within nations and across international borders, migration is undoubtedly a global issue. Depending on the type of political and geographic border crossings, migration can be classified as either internal or external. According to Hanlon and Vicino (2014), domestic migration is the movement of people within certain political boundaries, while external migration is the movement of people across international borders.

Furthermore, migration which is characterized by the migrant's deliberate and rational choice is one of the essential and important components of population dynamics in urban areas (Fentaw, 2020). International migration imposes several kinds of restrictions and checks on potential migrants. On the other hand, internal migration is far more practical. Internal migration has become a major issue influencing government policies and actions in the majority of developing countries across the world. There are 244 million foreign migrants and 763 million internal migrants worldwide (Chernyak and Chernyak, 2019). When one looks at the spatial migrations of people, internal migration the movement of people within one's own country seems to be commonplace.

Over half of the world's population now lives in urban areas, and this trend is expected to continue in the twenty-first century, with emerging nations having the quickest rates of development (Alliance, 2015). According to UN-Habitat's prediction, 66% of the world's population will live in urban areas by 2050. Globally, 2.5 billion people will live in urban areas by 2050 as a result of urbanization. Consequently, almost 90% of the growth will occur in developing countries' urban areas (UN-Habitat, 2014).

Additionally, Mohammed et al. (2020) pointed out that urbanization is speeding up globally, with emerging countries now seeing the greatest rate of urban growth. Accordingly, Kundu and Pandey (2020) said that the year 2007 marked a significant turning point in human history as the world's urban population finally overtook its rural population. The current level of urbanization on our globe is higher than it has ever been, and predictions indicate that this tendency will continue to rise over the coming decades. Given this, Zhang (2016) reasoned that migrant flows toward urban centers were a result of these urbanization processes in the twenty-first-century globalized age. Our way of life is being drastically altered by the widespread movement of people from rural to urban places. The developing world will experience the fastest rates of urbanization both now and in the future.

According to Zhang (2016), urbanization is accelerating in developing and poor nations, with Asia, Africa, and Latin America representing 54%, 32.5 percent, and 6.8% of the total urban

population growth, respectively. In many nations, migration-induced urbanization leads to the horizontal expansion of urban areas into nearby rural areas where farming is the primary source of income for the local population (Mengist, 2022). Additionally, Fetene et al. (2019) pointed out that rural farmland on the outskirts of existing built-up areas is changing significantly as a result of urbanization in order to accommodate the growing demand for urban land. Peri-urban areas are among the most vulnerable to the rapid conversion of a sizable amount of prime agricultural land to urban areas, which causes farmers to lose their assets that provide a living (Tassie, 2018).

According to Seto et al. (2011), migration dynamics and horizontal spatial growth are interrelated phenomena that influence modern urbanization, environmental sustainability, and socio-economic development. In this context, Mohammed et al. (2017) noted that horizontal urban development into the periphery consumes a sizable amount of agriculture globally. Furthermore, Baye (2009) discovered empirically that the amount of agricultural land in urban regions has significantly decreased as a result of the horizontal spatial growth of urban areas consuming prime agricultural lands in their urban periphery. Assuming all regions with a high likelihood of urban expansion undergo transformation, an estimated 1.2 million km² of urban land will be transformed globally by 2030 (Seto et al., 2012). Urban growth rates vary by region. The yearly growth rate of urban land expansion was 7.48% in China, 4.84% in India, and 4.32% in Africa, despite regional differences in the contributions of population increase (Seto et al., 2011).

Africa's urban population will increase, creating greater room for future expansion (Seto et al., 2012). Amrevurayire and Ojeh (2016) pointed out that Africa's urban population is expected to treble between 2000 and 2030. As a result of continuous migration to urban areas, there is a lack of formal housing; an increasing number of urban residents are now anticipated to reside in informal housing on the outskirts. In keeping with this, Talema and Nigusie (2023) stated that in order to accommodate the nation's expanding urban population and economic activity, the majority of Ethiopia's urban centers particularly the capital Addis Ababa and the nearby towns have been expanding horizontally towards peri-urban areas.

Ethiopia is one of the emerging nations with the fastest rates of urbanization (Alliance, 2015). Accordingly, it is anticipated that Ethiopia's rate of urbanization will rise dramatically over the next few decades, with medium-sized cities and new suburbs doubling every ten years due to natural population growth, the unavoidable rural-to-urban migration, and poor agricultural performance (Cohen, 2015; Davis, 2006; Pacione, 2011; Yirgalem, 2008).

Additionally, Negari and Kumar (2019) found that natural population growth, rural-urban migration and the reclassification of rural land are the main causes of Ethiopia's urbanization.

According to the World Bank Group (2015), natural growth was responsible for 40% of the increase in the urban population prior to 2018, followed by rural-urban migration (33%), and the reclassification of rural villages to urban centers (24%). However, given the country's rapid rate of urbanization, rural-to-urban migration is anticipated to surpass natural growth (World Bank Group, 2015). Although urban-urban migration has increased, most Ethiopian migrants, who have accounted for almost half of the country's urban population for the last 20 years, originate directly from rural areas (Tegenu, 2010).

Urban growth in Woldia, like other Ethiopian urban areas, involves changes in the spatial (physical) and geographical elements, as seen by the conversion of peri-urban agricultural lands. Woldia's total size was estimated to be 355 hectares in 1994 (Baye, 2009). The town's overall area in 2020 was 2213 hectares data gathered from the municipality based on the land use that was in place. This indicates that the urban area grew by almost 1858 hectares, or 523.38%. Within 26 years, 1858 hectares of the surrounding area, including agricultural lands, were absorbed by this outward expansion and ensuing rural land encroachment. This implies that between 1994 and 2020, the yearly rate of urban expansion is 20.13%. Migration has been exacerbated by Woldia's fast rate of urban expansion and the rise in the urban population. As a result, the peri-urban areas of Woldia are increasingly experiencing horizontal spatial expansion.

Woldia is currently faced with a number of urban issues. One of these is the town's unplanned growth into the surrounding rural areas and its rapid horizontal expansion. Planning does not properly regulate the town (Baye et al., 2020). The main causes of this physical growth were intra-migration from the town center to the outskirts, rural-to-urban migration, which were bolstered by urban-to-urban migration, mostly from nearby small towns and rural districts, and population growth, which led to a natural increase. Furthermore, Mohammed et al. (2017) pointed out that Woldia town's horizontal growth is caused by government policies that expropriate prime agricultural land from the periphery due to urban expansion. These include: (1) public sector projects, such as schools, roads, universities, water and sanitation facilities, and health stations; (2) industrial zones, such as manufacturing industries; (3) residential housing for urban dwellers and private and public employees; and (4) private investment, such as mixed land use and private hotels.

Nevertheless, the ways in which migration dynamics give rise to horizontal spatial expansion have received less attention. Additionally, no studies have been conducted on how migration dynamics and remittances contribute to the development of spatial growth in Woldia's peri-urban areas. It is concerning that the primary causes of migration, its effects, and the part remittances plays in horizontal expansion have not been well examined. Due to the paucity of research in this area,

there has not been much study done on this problem in Woldia's peri-urban areas. In light of this circumstance and the current knowledge gap, this study aims to explore the main causes of migration and its impact, as well as the contribution of remittance flow to Woldia's horizontal spatial growth in the peri-urban area of the town.

1.2 Statement of the Problem

It is believed that the growth of urban areas is the process of development. According to Eyaya (2014), urban areas are the centers of civilization, generating economic progress along with advancements in the social, cultural, spiritual, and scientific domains. In this regard, Jedwab and Vollrath (2015) noted that urban growth is significantly influenced by migration. Urbanization is happening around the planet at an astonishing rate. As the world's population grows and more people move from rural to urban areas, an additional 2.5 billion people are expected to reside in urban centers by the end of the next 30 years. It is anticipated that emerging countries, primarily in Asia and Sub-Saharan Africa, will bear at least 90% of this change (DESA, 2019 referenced in Brewer et al., 2024).

Currently, two of the most important demographic phenomena are migration and urban horizontal expansion. As urban areas grow and economies become more interconnected, people are moving from rural to urban areas more frequently in pursuit of economic opportunities and a higher standard of living (Adesezha & Omotayo, 2023). Although to varying degrees, urban horizontal expansion and the migration process present obstacles to the socio-economic development of communities that send and receive migrants.. In this context, Ratha (2013) noted that migration generates both opportunities and difficulties for the areas of origin and destination. Migrants' remittances, on the one hand, increase household earnings and promote local economies, which helps to reduce poverty in the areas of origin. However, destination areas frequently experience pressures on social services, housing, and infrastructure, which exacerbate inequality.

Migration from rural to urban areas has been a key factor in the worldwide urbanization process. According to Lall et al. (2006), it was a significant factor in both industrialized and developing nations' urbanization processes. According to Kefelegn (2020), the majority of developing nations have experienced unprecedented levels of urbanization, which has caused people to migrate from rural to urban regions, leading to the formation of informal settlements and slums. Moreover, Cohen (2006) and Seto (2011) claimed that the interaction of migration dynamics and horizontal expansion poses significant problems for social justice, resource management, and sustainable urban development. Migration directly affects the horizontal growth of urban and peri-urban areas

frequently resulting in unplanned sprawl, land-use fragmentation, and ecological degradation, regardless of whether it is motivated by economic opportunity, environmental stressors, or conflict.

According to the country's Central Statistical Authority (CSA), the percentage of the population living in urban areas grew from 13.8% in 1994 to 16.1% in 2007 and is predicted to reach 30.6% in 2037 (CSA, 2013). Furthermore, the United Nations World Population Prospects (2019) reported that 21.2% of Ethiopians lived in urban areas in 2019 and by 2050 this percentage is expected to rise to 40 %). To this end, the country's high rate of urbanization is caused by internal migration, especially net migration to urban regions (Ketema & Diriba, 2021). Since most of Ethiopia's current urban centers are centered at the base of the urban hierarchy, there is an opportunity to reduce and safeguard externalities such urban crowdedness (Ermias et al., 2019).

Urban population growth which is driven by migration and other related factors demand urban land and floor area which lead to urban areas grow and develop. In light of this, Angel et al. (2021) stated that urban areas have gained floor space in three different ways to accommodate the growing population (1) by increasing horizontal expansion; (2) by occupying the vacant spaces between buildings; and (3) by constructing higher (vertical growth). Typically, these three approaches have been mixed together. However, this study's primary focus is on horizontal growth, or the first way. Lamson-Hall et al. (2022) pointed out that Ethiopia's horizontal urban expansion is a result of both a high natural rate of population growth and significant migrant patterns brought on by a number of factors such as new job opportunities in urban areas, displacement from ethnic conflicts, and drought-related challenges in the rural economy. In addition, a variety of social, economic, and environmental issues in the nation have contributed to urbanization (Kebbede, 2017).

Because of the pace of migration and natural growth, Woldia town has had one of the fastest rates of urban population growth in Ethiopia. According to the CSA (2007), the town grew at an annual growth rate of 4.11% and this figure is increased to 7.04% as data obtained from Woldia Woreda Health Department in the year 2020/21. The town's population has increased as a result of massive rural-urban and urban-to-urban migration primarily originated from nearby small towns and rural woredas. For instance, the result of 1994 population and housing census depicted that there were 24,533 people living in Woldia, of whom 11,325 were migrants, making up approximately 46.16% of the town's total population. Similarly, the 2007 population and housing census of Ethiopia showed that 19,363 (42%) of the 46,139 people living in Woldia were migrants (CSA, 1994; CSA, 2007).

In addition, migration data gathered from Woldia Woreda Health Department verified that the town's total urban population was 89,707 in the year 2020/21. Of these, 49, 887 or (55.61%) of the total population, were migrants. This suggests that migration is one of the primary causes of the

town's present population growth. This is largely because of the town's socio-economic standing, its strategic location along the main route between Addis Ababa and Mekele, and its function as a hub for tourists visiting areas of Lalibela, Bahir Dar, Gondar, and Afar regions. The newly opened Woldia Teachers' College, Woldia University and the availability of various improved social services were also pulling factors that more migrants are moving to the town.

The population of Woldia town is currently growing periodically due to the entrance of new migrants. The growing population necessitates additional urban space for a range of socio-economic development purposes including housing, roads, schools, recreation, and commerce. According to Baye (2009), this resulted in the town physically enlarging its boundary to nearby rural and peri-urban areas by acquiring more land where people did live mostly in agriculture.

According to aerial photos taken in 1965, the total area of the town was 51 hectare. As data obtained from the CSA (2007), the physical growth of the town was 556 hectares and this figure was increased 2213 hectares data obtained from the municipality of the town in the year 2020. The annual physical growth rate of the town between the year 1965 and 2007, and between 2007 and 2020 was 23.58 % and 22.92 % respectively. This implies that the town is expanding horizontally in alarming rate within short period of years. Wherever horizontal urban expansion has happened, there is a negative impact on the peripheral area in different aspects, especially in relation to the displacement of farmers from their agricultural land (loss of farm land), deforestation and loss of eco-systems, water and air pollution, environmental or land degradation and waste generation, conflicts and higher costs for infrastructure and services.

Scholars such as Baye (2009), Belay (2011), Miheretu (2011), Wondimagegnhu (2012), Eyaya (2014), Habtamu (2015), Kebede (2017), Ermias et al. (2019), Kefelegn (2020), Zerihun (2020), and Mitiku and Mulatu (2021) have conducted research on migration and urban-related issues in different parts of Ethiopia. The majority of them slightly highlighted the reasons for and effects of migration and urbanization. However, the role of migration in driving horizontal expansion in Ethiopia was not studied well. Furthermore, the issues that the above researchers have examined are location-specific and may be tackled in various ways with various responses. Consequently, this study aims to close the gap that was not covered by previous research and can provide important information for scholarly study as well as direct policy-making and real-world applications.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study is to examine the role of migration in driving urban horizontal expansion of Woldia town.

1.3.2 Specific Objectives

1. Identify the main drivers of migration and their interplay for urban horizontal expansion of Woldia town.
2. Examine the effects of migration on Woldia's growth and surrounding migrant sending areas.
3. Explore the role of remittance flow in driving the horizontal expansion of the town.
4. Assess the effects of horizontal expansion on LULC and evaluate the trends of land use and land cover changes of Woldia from the year 2000 to 2020.

1.4 Research Questions

1. What are the primary reasons of migration and their interplay for the horizontal spatial growth of Woldia town?
2. What are the main effects of migration at place of origin and destination?
3. What are the main roles of remittance in driving the horizontal expansion of the town?
4. What are the effects of horizontal growth of Woldia on LULC and the changes observed from the year 2000 to 2020?

The purposes of the research are to examine migration drivers and urban horizontal expansion of Woldia town, assess its effect on migrant sending and receiving areas, and the role of remittance for outward growth of the Town.

Table 1.1 Basic research questions and sub-research questions

Basic Research Questions	Sub- Research Questions
1. What are the primary reasons of migration and their interplay for horizontal spatial growth of Woldia?	1) What are the main triggering push-pull factors which contribute for the horizontal development of the town? 2) What are the main socio-economic and environmental factors which contribute for spatial growth? 3) How population growth rates of the town can be the causes for horizontal growth of the town? 4) What are the contributing factors for the foundation and development of Woldia besides migration?
2. What are the main effects of migration at place of origin and destination?	1) What are the main demographic changes observed on both migrant sending and receiving areas? 2) What employment patterns/economic impacts can be seen on both sending and receiving areas? 3) What are the social effects of migration (family dynamics, social cohesion, and cultural integration) on migrant sending and receiving communities?
3. What are the main roles of remittance for the horizontal expansion of the town?	1) What are the main means of migration, destination areas and motives to remit money? 2) What are the various channels that migrants' used to remit money to their home area? 3) What are the major challenges migrants to use formal remittance channels? 4) What are the main effects of remittances driven urban growth?
4.4 What are the main effects of horizontal growth of Woldia on LULC and the changes observed from the year 2000 to 2020?	1) What are the main drivers and changes of LULCC in the town? 2) How horizontal growth affects LULCC?

(Source: Constructed by author, 2021)

1.5 Significance of the Study

In Woldia, migration dynamics and horizontal expansion are major concerns. The town's population is growing faster due to rural-to-urban, urban-to-urban, and intra-urban migration, and flow of remittance from migrants' to the town. This in turn causes a high demand for land for various socio-economic developments, which imposes ongoing challenges to the town's existing spatial growth by consuming prime land in the nearby rural areas.

In order to gain a better understanding of the concern of migration dynamics and horizontal expansion, there is a need for a detailed study on how, for example, migration can be the causes for the horizontal growth, and how the push-pull drivers and remittance are contributing factors for the growth of the town. There is also a need for conducting research on the positive and negative effects of migration on migrant sending and receiving areas in connection to urban growth. Moreover, considering and examining the role of remittance that has contributed to the horizontal development of the town is so essential.

Thus, it is appropriate to study how migration affects the town's spatial growth so that decision-makers may make well-informed decisions. For instance, it could provide information for planners and policy makers in their overall effort to formulate and implement population redistribution or migration policy as well as narrowing the development gap between urban and rural areas through the introduction of sound rural development strategies and effective urban management. Despite its different geographic scope, the empirical findings and recommendations of the study can provide new insights for local administrators how migration can be managed across other urban areas of Ethiopia or Africa that are experiencing similar socio-cultural and economic causes for urban-ward migration. The study will also serve as a secondary source of information for those who have a plan to carry out further study on migration and urban related issues.

1.6 Scope of the Study

Geographically, the study is delimited to a medium sized Woldia town particularly where horizontal expansion takes place at the fringes of Adengure, Ariro, Mechare, Michael, and Teklahymanot. Besides to the geographical scope of the study, this study is limited to intra migrant (those migrants who migrated from the center of Woldia to the periphery), rural-urban and urban-urban migrants as target population. The target population of the study is limited to peri-urban migrants' because they are the most targeted population in the study. The study is also restricted to individuals working in administrative offices, such as town mayors, municipalities, Zone experts, Woreda offices, Kebele offices, and other important informants who can attest to the study's characteristics.

This study aims to investigate the nexuses of migration drivers and urban horizontal expansion and its effects on migrant sending and receiving areas, as well as the role of remittances in shaping for the spatial growth of Woldia. In addition to these, the study will be delimited to the demographic statistics taken from Central statistic Authority (CSA) of Ethiopia results for Woldia from 1984 to 2019/2020. The study is also delimited to: Arc GIS 10.4 and SPSS version-21 soft wares’.

1.7 Limitation of the Study

The first limitation is that the study excluded people who were not migrants. This limited the amount of information that could have been obtained from the excluded population regarding policies and strategies that are crucial for managing migration. As with any research, these limitations ensure that the findings are not inflated.

The second research problem that I encountered was that, I stolen my laptop and external hard disk by theft 28 September 2020 in my study area. As a result, I lost all my documents and files which were so pivotal for my study. This problem is caused me in two ways. The first is, it demands more time to collect and organized the relevant data, and this in turn led to prolong my study period. The second is that to collect the necessary data, the data collectors requested me extra money to deliver it what the institution is budgeted me. Besides to these, the war commenced in November, 2020 between Tigray region and Federal government of Ethiopia encountered me to conduct my study as I planned since the study area was under the war zone and this situation created a psychological frustration on me to deliver things in proper and smooth way. Last but not least, I was severely sick in both of my feet for a significant period of time and this retarded me to finish the tasks I had planned. Despite all of these limitations, I completed the study with the help of God's, the encouragement, and support of my supervisors'.

1.8 Organization of the Paper

The paper is organized into five chapters. The first chapter is the introductory chapter. It includes background of the study, statement of the research problem, objectives and research questions, scope of the study, significance of the study, limitations of the study, and organization of the dissertation.

The second chapter presents the concept of key terms, the review of the theoretical and empirical literature, and portrays the knowledge gaps of the study. Specifically, the theoretical framework of this chapter presents the theoretical principles and the empirical findings of the study in light of migration drivers and urban horizontal expansion.

The third chapter deals with the research methodology used in this study including the description of the study area, the selection of study areas, research design, data sources, sampling procedures, data collection instruments, data collection procedures, data analysis and presentation, and validity and reliability of the study.

The fourth chapter presents the main research findings and/or results, discussion and implications of the study in light of the four basic and sub-operational research questions. Chapter five presents the conclusion, areas for future study and recommendations of the study based on the findings of the research output.

CHAPTER TWO: LITERATURE REVIEW

This chapter attempts in reviewing the concept of key terms, theories on the causes of migration, migration-led horizontal spatial growth, key drivers of migration and urban expansion, impacts and implications of migration at place of origin and destination, definition and concepts of remittance, pattern and inflows of remittance from global to Ethiopia level, destinations and routes of Ethiopian international migrants, determinants of remittance, channels of remittance, migration, remittance and horizontal spatial growth, challenges of remittance-driven urban growth in Ethiopia, migration driven land use/land cover change, and theories of LULC and urban transformation.

2.1 Concept of key Terms

2.1.1 Migration Related Terms

Human Migration is a typical phenomenon that often happens depending on the migratory population's socioeconomic, demographic, cultural, political, and environmental aspects. There is more to migration than merely relocating. It is crucial to understanding the ever-changing spatial relationships and content of areas (Gosal, 1961). Zanabazar et al. (2021) defined as migration is the act of people moving from one administrative region to another, or from their home country to another country or territory, either permanently or temporarily. According to Singh and Khan (2017), this can occur on a number of levels including inter-continental (across continents), intra-continental (between nations on a certain continent), and inter-regional (within nations). Therefore, this study focused on the third level of migration that is movement within the country.

Migration Dynamics is the study of the patterns, causes, and effects of human movement's. It includes the intricate interactions between social, economic, political, and environmental elements that affect why, where, and how individuals migrate (Castles, 2013; IOM, 2020). Additionally, Singh and Khan (2017) defined human movement, taking into account both its causes and consequences. According to Castles (2013) and IOM (2020), the following are important facets of migration dynamics which include:

Drivers of Migration: include pull factors like improved economic opportunity, political stability, or safety, as well as push factors like poverty, violence, and environmental degradation.

Migration Routes and Networks: The routes and networks that migrants travel, as well as the function that social networks play in enabling mobility.

Impacts: Effects on both origin and destination areas, including demographic changes, economic contributions, and cultural exchange.

Policy and Governance: How national and international policies influence the experiences of migrants and the patterns of migration. However, the working definition of this research used the

study of the main drivers, effects and their implication for the horizontal spatial growth of urban areas.

Push factors: are frequently compelling reasons for an individual or group of people to relocate, or at the very least, compelling them to do so.

Pull factors: are favorable conditions of the places where people are going that induce them to move there in search of a better life. These factors draw people to a new location mostly because of the resources that the area offers that the area of origin does not.

Area of origin: is the geographic area or previous home of an individual or group of individuals who have migrated to another area.

Area of destination: is a geographical area in which a movement terminates and the area of residence at the end of the migration interval.

Migrant: is a person who, for a number of reasons, relocates temporarily or permanently from their place of regular residence, whether within a nation or across an international border..

Rural-urban Migrant: is a person who relocates his/her usual place of residence from a rural to an urban area.

Step-migration: is migration that proceeds in a sequence of phases or steps in order to reach its objective. According to the urban centers' hierarchical order, i.e., from lowest to highest order, migrants move across urban wards (IOM, 2015).

Urban area: To date, there is currently no universally recognized definition of what constitutes an urban area. According to the United Nations (2014), the criteria often include administrative designations, population thresholds, population densities, the percentage of people working in non-agricultural industries, infrastructure availability, the existence of urban amenities, and frequently a mix of these. For the purpose of this study, the definition of an urban area has been defined based on population threshold and economic activities specific criteria. Accordingly, it is the human settlement with concentration of 2000 or more inhabitants mainly engaged in secondary and tertiary activities or non-agricultural activities.

Remittance is the money that a migrant sends home to their family. In other words, migrant workers send their family money, usually in the form of commodities and bank transactions (Zohry, 2011). Remittance is the term used to describe the cross-border movement of funds from one party to another. There are several methods for sending money to another country, such as mail, drafts, wire transfers, and checks. Although they are typically used to support or pay family members back home, remittances can be used for any type of payment, including invoices (Kagan and Murphy 2019 cited in Solomon, 2020). Additionally, since migrants usually know how to spend the money best,

remittances are value-added cash sent back to their home country (Ratha, 2009). The simplest definition of remittances is the money or items that migrants send home (Jennings and Clarke, 2005). For the purpose of this study, remittances refer to the transfers of money by members of migrant communities back to family members or other individuals in their country of origin from the country where they live and work.

2.1.2 Horizontal Expansion

The term "horizontal Expansion" refers to the physical or spatial growth of built-up areas. According to Bourne (1996), one of the primary indicators used to measure the degree of urbanization is the extension of urban land. According to him, the most recognizable aspect of the process in the spatial dimension is the growth of urban land. Furthermore, Ewing (1994) described horizontal growth as the gradual transformation of undeveloped land-use categories into developed land over time.

In addition, the term refers to the physical or spatial extension of built-up areas, which typically results from urban growth, albeit the dynamics of urban expansion also depend on the type of physical developments and the population densities they encourage. Urban growth can occur in a city without expanding if it is absorbed within the limits of existing settlements. On the other hand, expansion can take place without growth when new construction is made to allow for lower population densities in an existing community (Bloch et al., 2015).

According to Qi and Lu (2008), horizontal spatial growth is a type of low-density spatial development that is always distinguished by separated urban land uses or sporadic, irregular leapfrog expansion. It has recently become clear that urban areas are encroaching on rural areas at the expense of natural resources and farmlands. Urban settlements are gradually displacing the peri-urban farming community's livelihood and the aesthetic benefits of open spaces. This condition is most noticeable in the areas surrounding larger urban centers, even in developing nations. Therefore, given that urban areas are growing at the expense of farmland and other natural resources that are essential to people's survival, especially in urban areas with little farmland, one could argue that cities are becoming into a zero-sum game. Hence, the working definition of this study is used as the horizontal expansion of towns or cities onto their outskirts or peripheries at the expense of the peri-urban community's means of subsistence.

2.1.3 Peri-urban (Hinterland)

Peri-urban is not strictly defined that is described differently by different scholars. According to Adell (1999), peri-urban is frequently used to refer to recently urbanized areas on the outskirts of cities, particularly in developing nations. Moreover, Narain and Nischal (2007) defined peri-urban as a location, concept or process. As a location, it can describe the rural outskirts of urban areas. As a

concept, peri-urban could be seen as the interface (intersection) of institutions and activity in both rural and urban areas. As a process, it could be thought of as the two-way flow of products and services and a phase of transition between rural and urban areas.

According to Allen (2010), the peri-urban area is causing rapidly shifting spatial, socio-cultural, demographic, economic, and environmental realities that are still not fully understood. Increased urban characteristics and a progressive loss of rural values over time are common characteristics of the peri-urban interface as a phenomenon or process. Peri-urban areas have a diverse socio-economic makeup and are prone to quick changes throughout time. In line with this, Bertrand (2007).stated that peri-urban areas are those that are transitioning from purely rural to fully urban areas, and they are associated with a strong push for urban development. Furthermore, Allen (2010) noted that a given area may be inhabited by small farmers, step-wise migrants, informal settlers, industrial entrepreneurs, and urban middle-class commuters as shown in **Fig. 2.1**.

Peri-urban refers to an area that is not entirely urban or rural (Bengs and Schmidt-Thome, 2006). According to Wehrwein (1942), the urban fringe or peri-urban area is the territory that lies between the well-known urban development zones and the farmland areas. Consequently, the built-up city is not always in line with the political boundaries; in some cases, the economic and sociological city, where people live the urban lifestyle, extends well beyond the city limits; in other cases, the political boundaries of cities contain farms where people live the rural lifestyle.

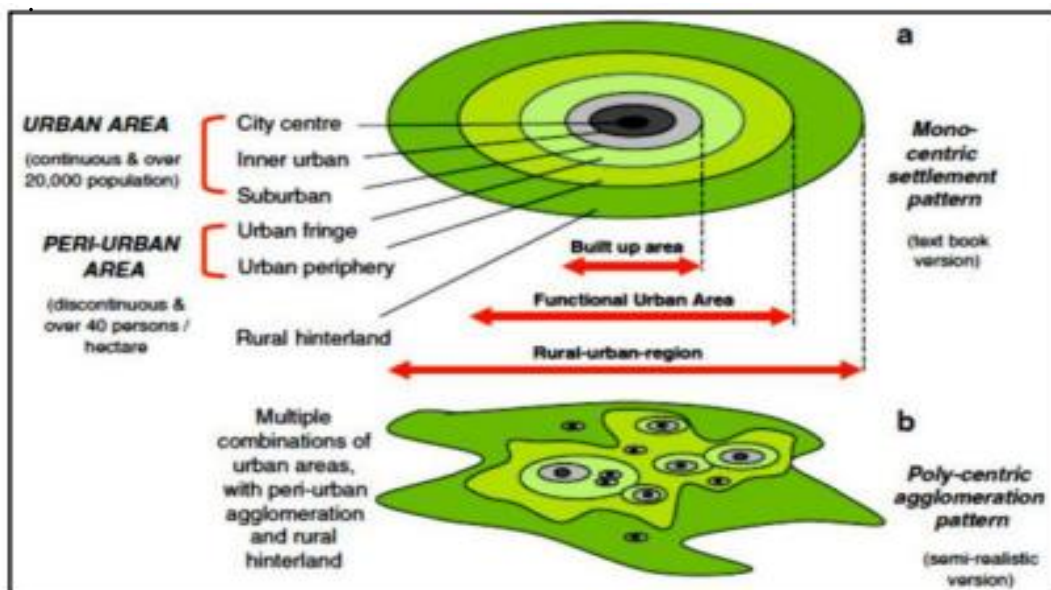


Figure 2.1 The Peripheral areas and/or the rural-urban fringe

(Source: Ravetz et al., 2013, p. 18)

Fig. 2.1 clearly shown the basic spatial characteristics of Rural-Urban Regions (RUR) and include the following.

Urban core (City center): The Central Business District and several other civic and cultural events, as well as the public spaces associated with them;

Inner urban area: frequently more crowded built-up areas with commercial, industrial, and residential purposes, as well as some greenery and public open space;

Suburban area: are connected to inner cities and are typically contiguous, lower-density built-up areas. These neighborhoods have local businesses, parks, and gardens, and houses are typically no more than 200 meters apart;

Urban fringe: is an area outside of the built-up area that consists of large green open spaces like nature reserves, farmland, urban woodlands, and golf courses, as well as a scattered pattern of lower-density residential neighborhoods and urban concentrations close to transit hubs.

Urban periphery: a section of the functioning urban area that is less populous than the main built-up areas. This could include business areas, smaller towns, and other urban land uses inside a viable agricultural matrix;

Rural hinterland: rural regions that encircle the peri-urban area but are nevertheless reachable in a reasonable amount of time by car. As a result, the rural character of these regions is shaped by the incomes and lifestyles of urban residents.

Thus, the peri-urban area encompasses both the urban periphery and urban fringe sections of the aforementioned description.. Hence, the peri-urban area considered in this study is defined as the area where sub-urbanization occurs, where urban and rural land uses mix, and where it is located within the urban sphere of influence.

2.2 Theories on the Causes of Migration

There is no single theory of migration that fully explains why people migrate. The phenomena of migration is complicated and impacted by many different factors including economic, social, political, environmental, and cultural drivers. Although various theories concentrate on particular facets of migration, none are able to fully explain the causes behind every human movement. Rather, a combination of theories that emphasize the complexity of migration is the most effective way to comprehend it (Massey et al., 1993; Black et al., 2011; Castels et al., 2013).

Numerous theories exist regarding migration including the Ravenstein Law of Migration Theory (1885), Stouffer's Theory of Intervening Opportunities (1940), Lewis's two-sector labor migration theory (1954), the push and pull factors migration theory (Lee, 1966), the Neoclassical Economic Theory of Migration (Harris & Todaro, 1970), the World Systems Theory of Migration

(Wallerstein, 1974), Stark's new economics labor migration theory (1985), the network theory of Taylor and Wyatt (1999), and Environmental Migration Theory of Myers (2002) which explain the causes and effects, characteristics, and patterns of migrant-sending (rural/urban) and migrant-receiving (urban) areas as well as migration and remittance.

Migration theories have historically placed more emphasis on South-North migration (movement from developing to developed countries) than South-South migration (movement between developing countries).due to economic disparities, labor demand, colonial and post-colonial ties, perceived economic and social impact, and policy and academic focus in the global north. Nonetheless, the significance of South-South migration, which makes up a large share of global migration flows, is becoming more widely acknowledged, and to better understand its dynamics and effects, academics and policymakers are urging more research on the topic (Todaro, 1969; Massey et al., 1993; Bakewell, 2009; Castles et al., 2013).

However, this paper identified Ravenstein Laws of migration, Stouffer's intervening opportunities, Lee's push-pull theories, the new economics labor migration theory of stark, the network theory of Taylor & Wyatt, and environmental migration theory of Myers based on their relevance to this study.

2.2.1 Ravenstein Law of Migration Theory

Ravenstein developed his "Law of Migration" theory in 1885 using information from the 1881 British census of birthplaces,. He developed a set of rules that clarified the current European migratory situation. His rules covered a variety of topics related to migration, including the traits of migrants, their intentions, and trends that took into account the places of origin and destination (Ravenstein, 1885).

Ravenstein suggested the rules of migration based on his research on birthplace analysis and migratory trends. Some of the key tenets of his theory are as follows: 1) the majority of migrants migrate short distances, and as the distance increases, the number of migrants decreases; migrants who migrate long distances typically choose to settle in one of the major hubs of industry and commerce; 2) migration happens in phases, starting in nearby locations and progressing to the rapidly growing cities.. 3) the flow of migration is never unidirectional (there are streams and counter-streams of migration); 4) the direction of migration is primarily from agricultural to industrial areas, meaning that migrants are more likely to have rural origins than urban ones; 5) women seem to predominate among short-distance migrants; 6) the volume of migration increases as transportation, industry, and commerce develop; and 7) economic motives predominate among push and pull factors of migration (Ravenstein, 1885).

Among the first theories of migration, Ravenstein's "laws of migration" served as the foundation for more recent theories (King, 2012). According to his idea, people move from their place of origin to migration destination places in pursuit of better chances. This subtly suggests that people in rural parts of emerging nations are much more likely to move than people in metropolitan areas in pursuit of employment opportunities.

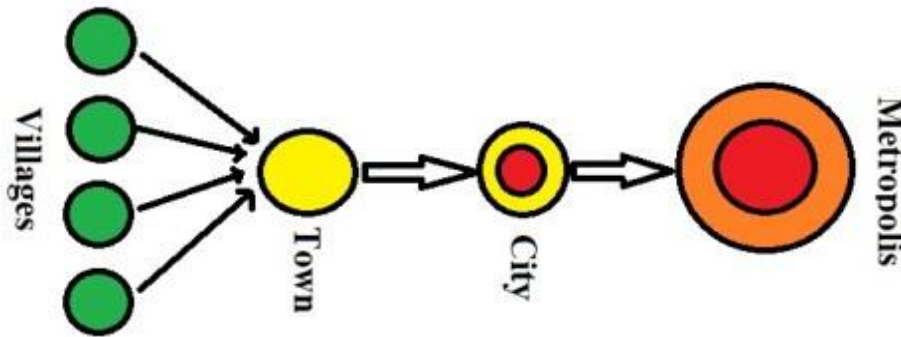


Figure 2.2. Stepped Migration

(Source: Singh, 2023, <https://pangeography.com/Ravenstein's-laws-of-migration>)

According to Ravenstein's stages of migration concept, people move from rural areas to primate cities throughout time in pursuit of better social services and job opportunities (Clark, 2008). Instead of migrating from villages to urban areas, people migrate in phases, as seen in **Fig. 2.2**. Rather, they travel from the hamlet to the small town, then to the city, and lastly to the metropolis. As a result, migrants take steps and travel the long journey in stages.

From Ravenstein's explanation, we can conclude that urban growth was fueled by rural to urban migration, and the main causes of migration were economic motive. Migration is sex and age selective, and it is also related to distance. Though the theory was developed and applied for advanced nations of Europe, specifically for Britain, it is also applicable for this study. Therefore, most of Ravenstein's laws are consistent with the study findings, with the exception of law 5, which states that females appear to predominate among short journey against male dominant migrants of this study.

2.2.2 Stouffer's Theory of Intervening Opportunities

In 1940, Stouffer developed his "Intervening Opportunities" theory, which links mobility with distance. According to Ravenstein's Laws of migration Theory, the most crucial element in determining the composition and volume of migration is distance; yet, his theory shows that the nature of geographic space has a greater influence on migration behavior. His model is a cross between the gravity model of migration and other models. He came to see that rivalry between migrants from various places is just as important to migration as opportunity at the place of origin and

destination. He claims that there is a substantial correlation between the volume of migration and the quantity of opportunities at both the origin and destination areas. Furthermore, migration has an inverse relationship with the quantity of opportunities that exist between the two locations (Stouffer, 1940).

In his model, he uses the quantity of opportunities as a pulling force and the barriers or hurdles as push forces, instead of deciding on the size of cities. The magnitudes of migration depend on the total push and pull forces at the origin and destination locations. Since a place with more opportunities attracts more people, it becomes a destination. Conversely, a place with fewer opportunities becomes the point of origin. Furthermore, the more opportunities that exist between the point of origin and the destination, the more migration occur. Therefore, many migrants stop at the intervening cities and do not continue to the large city (Stouffer, 1940).

To sum up, Stouffer's migration model was important for addressing the volume and direction of migration. Gravity is used in this positivist model to estimate migration between two places. The behavioral and sociological traits that are essential to understanding the makeup of migration are absent from his model. People who lack awareness and education, for instance, are prone to stay in their place of origin, according to his theory. Certain aspects of the model such as factors of opportunities and challenges mentioned at the origin and destination are relevant to this study.

2.2.3 Lee's Theory of Migration: The Push-Pull Model

Everest Lee updated the fundamental push-pull theory in 1966. According to Lee (1966), he developed a "general schema" to accommodate for various spatial movements. He also tried to make some inferences regarding the factors that contribute to migration, the amount of migration, the development of streams and counter streams, and the traits of migrants. "Push" factors (related to the area of origin), "pull" factors (related to the area of destination), intervening impediments, and personal factors are the four categories into which Lee divided the causes of migration.

Lee also suggested that there are zero forces that have no bearing on either situation, negative forces that drive people away or repel them from the region, and positive forces that attract or keep individuals in the area. Age, economic status, religious beliefs, and educational attainment are examples of personal traits that impact these criteria pertaining to the regions of origin and destination, "which affect individual thresholds and facilitate or retard migration." According to Lee's model, "intervening obstacles" are the last factor that stands between place of origin and destination. When a migrant is moving from one location to another, they face several issues and obstacles. These include transportation expenses and migration restrictions, which can cause "friction" in the migration

process and slow or impede migration, or even stop it completely in the case of legislation (Lee, 1966).

Overall, we can say that Lee's theory offers a thorough and comprehensive account of the various aspects of migration, including its volume and flow as well as the traits of migrants. Additionally, it attempts to provide a coherent explanation for nearly every facet of the migrating process. Despite being a remarkable intellectual endeavor, Lee's idea is not objective regarding the diversity of nature and the area. Therefore, this study can benefit from some of the theoretical underpinnings of this model, particularly the origin and destination aspects. This study will therefore be assessed in light of the theories' frameworks and tenets due to their importance.

2.2.4 The New Economic Labour Migration theory (NELM)

The new economics labor migration theory developed by Stark in 1985 stated that the decision to migrate is made at the household level in order to maximize the welfare of the households. NELM theory is the prevailing theory which challenges the neoclassical theories which considers migration as an individual decision making process. In contrary to the neo-classical, the NELM theory states that migration decisions such as who goes, where to go, for how long and to do what are not individual decisions rather joint decisions taken within the realm of the household (Taylor, 1999). Therefore, the household is both an actor and a decision maker in migration process. Sometimes the scale of the decision-making unit moves further into the extended families and wider communal groups (Stark and Bloom, 2013).

According to the NELM theory, rural out-migration affects the migrant-sending areas via both the remittance channel and the lost labor channel. The remittance flow is expected to improve the wellbeing of migrant-sending households in the host areas. However, by reducing agricultural output and human capital in the areas of origin, the lost labor channel may have a detrimental effect on the welfare of households that send migrants. As a result, migration entails give and take rather than occurring in a vacuum (Stark, 1985).

To sum up, NELM has expanded the scope of migration studies by emphasizing remittances as a crucial part of household income and by acknowledging migration as a strategy for risk management as opposed to just income maximization. Additionally, it offers a useful lens through which to examine migration in developing nations, shedding light on the relationship among economic development, household wellbeing, and migration. It emphasizes the necessity for policies that address the structural vulnerabilities encountered by migrant-sending households and emphasizes the intricacy of migration processes through its focus on risk diversification and collaborative decision-making.

2.2.5 The Social Network Theory

Taylor and Wyatt developed the network theory in 1999, which postulates that migration is not solely economic in nature. It provides an explanation of migration by examining the relationships between people in the home and destination locations. Relationships between potential migrants and non-migrants in the country of origin are said to be the primary cause of migration (Taylor and Wyatt, 1999). Furthermore, the degree to which a migrant is tied to their home, community, and destination influences their desire to migrate (Munshi, 2003; Borjas, 1992; Munshi, 2014). They discovered that a large portion of the body of research to date has concentrated on the ways in which close ties to the destination community can help recent arrivals by giving them access to material support and job information.

Social networks are becoming more and more recognized as significant sources of social capital (Ryan et al., 2008), which raises the potential returns on migration, lowers the cost of movement, and makes it easier for migrants to obtain employment in their new countries (Massey et al., 1993). Multiplier effects in networks have the potential to cause a migration chain (Dessalegn et al., 2023). The very fact that a network or migration chain exists lowers the dangers and expenses that migrants may face, which leads to an increase in migration. Migration networks include remittances and personal connections that span geographic borders and link migrants, former migrants, and non-migrants (Dessalegn et al., 2023; Massey et al., 1999).

In conclusion, social network theory has significantly influenced how we see migration by highlighting the influence of social connections and interpersonal relationships on migration patterns, decision-making, and outcomes. The theory also underscores how migration is dynamic and self-sustaining, as existing networks help future migrants overcome obstacles and support the growth of migrant communities in their destination areas. Additionally, it offers insightful information about the function of social capital in migration processes by showing how reciprocity, trust, and common standards within networks help migrants overcome obstacles in both their place of origin and their place of destination.

2.2.6. Environmental Migration Theory

Environmental migration theory focuses on the movement of people or groups as a result of environmental variables that negatively impact their living conditions or quality of life. This theory links migration in recent decades to environmental degradation (e.g., sea-level rise, droughts) and climate change. It forecasts a rise in "climate refugees" when environments become uninhabitable. (Myers, 2002).

Environmental migration theory is crucial to comprehending the intricate relationships between environmental changes and human movement particularly when climate change picks up speed. It emphasizes how migration is a reaction to environmental stress as well as a means of adjusting to it, with important ramifications for international collaboration and policy. Although there are issues with its definition and legal recognition, it is nevertheless an essential framework for meeting the needs of people who have been displaced by environmental conditions and guaranteeing that their rights and dignity are upheld in a society that is becoming more and more vulnerable to climate change (Myers, 2002; Black et al., 2011).

In nutshell, environmental migration theory offers a crucial foundation for comprehending the intricate connection between human mobility and environmental changes. It emphasizes how environmental elements—like degradation, climate change, natural disasters, and sea level rise play a major role in influencing migration and frequently exacerbate preexisting social, economic, and political vulnerabilities. In the twenty-first century, this theory will continue to be crucial for guiding practices and policies that address the relationship between environmental sustainability and human mobility as climate change intensifies.

Considering the various motives, processes, and effects of migration, we can draw the conclusion that, taken as a whole, migration theories offer a comprehensive knowledge of the intricate and ever-changing nature of human movement. These theories emphasize how social networks, environmental circumstances, household tactics, and human agency interact to influence migration outcomes and decisions.

Our understanding of migration as an adaptive response to a range of push and pull causes is enhanced by this diversity of perspectives, which, while no single theory can fully explain the complexities of migration, collectively highlight the importance of multidisciplinary research and context-specific analysis. Social theories emphasize the role of networks and relationships, economic theories highlight income disparities and risk diversification, and environmental theories highlight the growing effects of ecological degradation and climate change.

2.3 Migration-led Horizontal Spatial Growth and Drivers of Migration

2.3.1 Empirical Review on Migration-led Horizontal Spatial Growth

Urban areas physical growth can be described from both a demographic and economic functioning standpoint. Economic functional definitions of urbanization do not only focus on population dynamics; they also highlight the spatial concentration of economic activities, including industries and services. Demographic definitions of urbanization, on the other hand, focus mostly on variables

like population density and size (Tegenu, 2010). Thus, this study examines horizontal growth from a demographic standpoint, focusing on population shifts rather than economic functions.

Migration is the primary driver of urbanization. Urbanization is the gradual increase in the proportion of a population that lives in urban areas and the corresponding decline in rural areas. This complex process includes changes in the economy, politics, culture, and population (Adesegeha & Omotayo, 2023). According to Tacoil et al. (2015), the urbanization of a country is caused by both net migration to urban areas and internal migration. Although it rarely has a significant impact when urbanization and growth are happening quickly, international migration can also have an effect on urbanization if it primarily affects either rural or urban people. Particularly rapid urban population growth is often the outcome of rapid urbanization and rapid general population expansion.

Scholars have different perspectives on the causes of urban expansion. For example, Angel et al. (2016) claimed that because newcomers require land for housing and services, the horizontal growth of human settlements always occurs in parallel with population growth. Furthermore, Jedwab and Vollrath (2015) claimed that as metropolitan regions experience increased population pressure due to migration, the need for land and space increases over time.

According to Lamson-Hall et al. (2022), when urban populations are growing rapidly, the majority of citizens may no longer be able to obtain land in the existing area. In order to accommodate the growth of businesses that require additional space, the densification of crowded neighborhoods, or the influx of new inhabitants such as those moving from rural to urban areas, land can be developed by occupying peri-urban areas.

Furthermore, Mabin et al. (2013) and Caldeira (2017) pointed out that a significant number of new migrants also settle in the urban periphery. The total built-up area of emerging nations doubled between 2000 and 2015 as a result of an increase in the urban population (Pesaresi et al., 2016). Due to their increased use of resources and land, urban regions' expansion into rural areas alters the natural ecosystem and terrain. According to McGranahan and Satterthwaite (2014), this could also lead to problems including pollution, climate change, and biodiversity loss. Singh (2014) stated that the rapid increase of urban centers is also causing changes in the urban environment, economy, government, infrastructure, society, shelter, and urban landscape.

One important measure of the rate of urban area expansion in emerging countries is spatial growth, a phenomenon that happens as urban space grows. Former villages and farmlands are swallowed up and transformed into urban areas as many urban districts rapidly grow on their outskirts (Bhatta, 2010). Furthermore, Mekuriaw and Gokcekus (2019) noted that urban areas in emerging countries are growing in a dynamic, diverse, chaotic, and increasingly expanded way. This causes a

change in land use from rural to urban activities and affects the physical forms of the environment as well as the social and economic features of the peri-urban interface. In a similar vein, Mengist (2022) found that urban areas expand into rural peripheries as their populations increase, causing the authorities to evict farmers who are already residing there and making a living from farming.

Migration-led urbanization is defined by Tegenu (2010) as follows: a) an increase in the number of towns (multiplication of the points of concentration); b) the development of the rural market functions (handicraft, trade, and service); and c) an uneven growth in the size and spatial distribution of towns ("distorted location incentives").

To sum up the discussion so far, migration is a key factor for horizontal spatial growth in changing urban landscapes through outward expansion. Population mobility, economic possibilities, and housing demands interact dynamically to produce this phenomenon, which is typified by the expansion of settlements into peri-urban and rural areas. Such expansion creates accessible housing, cultural diversity, and economic vibrancy, but it also brings with it serious drawbacks including urban sprawl, environmental damage, and overburdened infrastructure.

2.3.2 Migration –led Urbanization in Africa and Ethiopia

Urbanization is centered in the Global South countries as predicted. Despite having the least urbanized regions, sub-Saharan African countries are expanding at the highest rate, at 4.1 percent per year. Migration from rural to urban areas is the main factor driving urbanization in this region (Tumwesigye et al., 2021). According to Lamson-Hall et al. (2019), the United Nations Population Division estimates that by 2050, 55% of people in Sub-Saharan Africa will reside in urban areas, and during the next three decades, Ethiopia will witness the growth of urban areas that will endure for many generations.

The proportion of people living in urban areas is expected to rise to 58.9% and 66.2%, respectively in 2050 despite the fact that both Africa and Asia are expected to have average annual rates of urbanization of roughly 1.1% (UN, 2018 cited in Bocquier et al., 2023). For example, the urban population in sub-Saharan Africa grew at a rate of 4% between 2015 and 2020, and is predicted to expand at a rate of 3.7% between 2025 and 2030. In Eastern Africa, the figures were 4.5% between 2015 and 2020, and are forecast to grow at a rate of 4.2% between 2025 and 2030 (United Nations, 2018). This showed that Eastern African nations are really seeing much faster rates of urban population increase than the continent average.

Migration is largely responsible for Africa's rapid urban population growth due to a combination of economic, social, political, demographic, and environmental factors. Teye (2018) stated that in some countries, the migration of people from rural to urban areas in search of

employment accounts for about 60% of the growth in urban areas due to the disparity in development between rural and urban areas. In this context, Awumbila (2017) also noted that migration is a major factor in the process of urbanization and the expansion of Africa, as people move in search of better social and economic opportunities as well as to avoid environmental degradation.

Even while migration to urban regions is visible in sub-Saharan Africa, the degree of rural-urban mobility will impact forecasts of future urban expansion, and the needs of migrants differ from those of urban-dwellers (Lamson-Hall et al., 2022). Additionally, Tacoli et al. (2015) observed that the rural-urban migration contributed to the urban population expansion in Sub-Saharan Africa, with one in three new inhabitants coming from rural areas. The study also found that more than two out of five people who will be added to metropolitan regions in Sub-Saharan Africa during the next three decades will be rural migrants.

The United Nations (2018) reports that more than one-third of the additional people who will live in urban centers over the next 30 years will do so in sub-Saharan Africa, where urban areas are growing faster than urban areas globally. The urbanization rate in Sub-Saharan Africa is predicted to increase from 41.4 percent in 2020 to 58.1 percent by 2050. In Sub-Saharan Africa, urban areas account for more than half of the world's urban growth, with rural-to-urban migration accounting for 43 percent of this expansion (Lamson-Hall et al., 2022).

The physical proximity of urban areas to the periphery facilitates the transfer by providing rural populations with access to pre-existing networks within urban areas (Awumbila, 2014). Rondinelli (1983) asserted that nearby urban centers "bridge the gap between the major urban centers and the rural hinterlands" by acting as areas of arrival and more significant elements of the urban system. A new system of neighboring urban centers is being created in various African countries as a result of the expansion of existing settlements due to natural rise and rural-urban migration.

According to Awumbila (2014), the majority of people in Sub-Saharan Africa have moved from rural to urban regions as a result of the continent's fast urbanization, which has been described as perhaps the most significant development since independence in the majority of African countries. For decades, the extreme urban demographic strain has been a valid concern for African governments and other observers.

From the aforementioned discussion, we can conclude that Africa's demographic, economic, and spatial future is being shaped by the transformative force of migration-driven urbanization. Urban areas are growing quickly since rural-to-urban migration is intensifying due to desires for improved economic, educational, and living conditions. This expansion highlights the double character of urbanization: it stimulates economic vitality, creativity, and cross-cultural interaction while also

putting a burden on infrastructure, increasing inequality, and escalating informality in housing and work. Thus, African countries must implement inclusive, context-sensitive policies in order to fully realize the potential of migration-driven urbanization. Decentralized economic possibilities, climate-resilient infrastructure, and affordable housing should be prioritized in order to lessen pressure on megacities and alleviate rural-urban inequities.

2.3.3 Migration and Urbanization Patterns in Ethiopia

2.3.3.1 Spatial Patterns of Internal Migration in Ethiopia

Ethiopian internal migration shows clear spatial patterns that are influenced by economic disparities, social factors, environmental conditions, and governmental policies. Internal migration patterns can be divided into four categories based on the origins and destinations of migrants: rural to rural, rural to urban, urban to urban, and urban to rural (Sinha, 2005).

Rural-to-rural migration is common in many developing nations, as workers from impoverished areas relocate to more prosperous, frequently irrigated areas with more employment prospects (Deshingkar & Grimm, 2004). Similar circumstances exist in Ethiopia, where the most common type of internal migration is from rural to rural areas, which is happening more frequently as a means of adjusting to subpar living and agricultural conditions (Ezera & Kiros, 2001). Ethiopia's Central Statistical Authority (CSA) (2012) found that 46.9% of internal migration in the country occurs from rural to rural, with rural to urban migration coming in second.

Deshingkar and Grimm (2015) claimed that because agriculture is a subsistence sector and labor-intensive industries are growing in urban areas, rural-urban migration is also prevalent in emerging nations. The second-largest internal movement in Ethiopia, accounting for 26.7% of all internal migration, is from rural to urban areas (CSA, 2012). The majority of the country's population moves from rural to urban areas, especially to Addis Ababa, Dire Dawa, and other secondary cities including Mekelle, Hawassa, Adama, and Bahir Dar.

Ethiopia also practices urban-to-urban and urban-to-rural migrations in addition to the two main patterns of internal migration mentioned above. Urban-to-urban migration, which has an impact on urban de-concentration, typically occurs when people move from urban centers, especially from smaller towns to larger cities, and from the center to the periphery (Sinha, 2005). Haile and Litchfield (2019) noted that there is a greater diversity in the migration to and from urban centers in Ethiopia. The majority of migrants in Addis Ababa are from Amhara (38 percent) and Oromia (31 percent), while the majority of migrants in Dire Dawa are from Oromia (44 percent) and Somali (14 percent). When people return to their hometowns, they may experience urban to rural migration. The majority

of these migrants are returnees, and they may bring back a variety of skills that will greatly help their home communities (Deshingkar & Grimm, 2004 & 2005).

Haile and Litchfield (2019) observed that the majority of internal migration in Ethiopia is now going to different places. Rural to rural migration made up the majority of internal migration until 2008, but more recently, the trend has shifted to rural to urban migration. Ethiopian rural-to-rural migration decreased dramatically between 1999 and 2013, while rural-to-urban migration increased greatly during the same time period, as illustrated in **Fig. 2.3**. The graph also shows that the country's internal migration is focused on urban areas, with neither urban to rural nor urban to urban migration significantly changing.

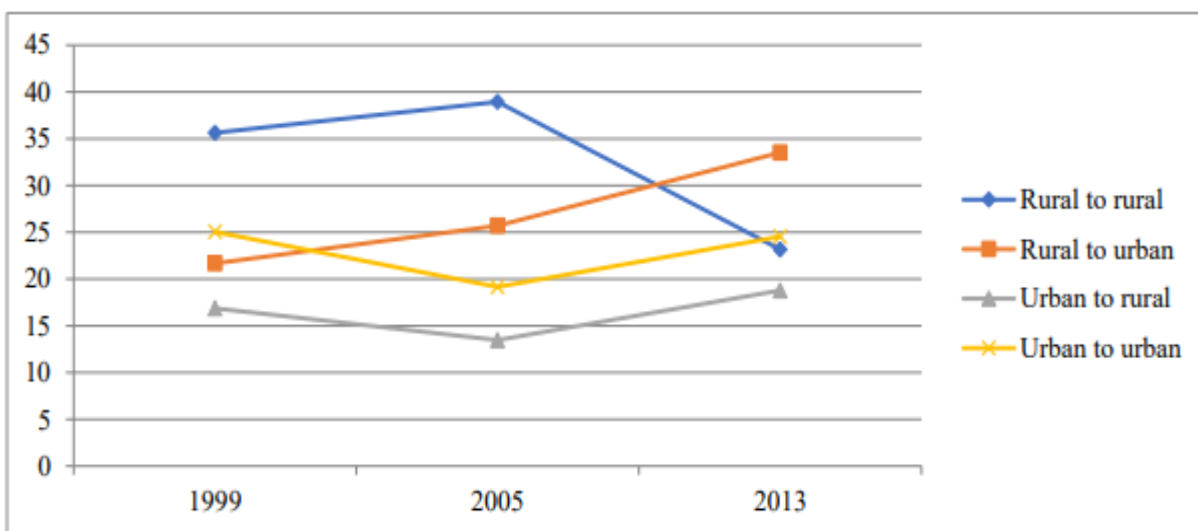


Figure 2.3. Share of internal migration, by type and time period

(Source: LFS, 1999; 2005; 2013 adopted from Haile & Litchfield, 2019, P.11)

2.3.3.2 Trends and Migration led Spatial Growth in Ethiopia

Ethiopia is one of the developing countries with a relatively high degree of internal migration and population redistribution. Between 1994 and 2007, the average annual growth rate of Ethiopia's urban population was 3.8%, while its rural population was 2.3% (Mitiku & Mulatu, 2021). Considering its level of urbanization, Ethiopia is the least urbanized country compared to most African countries (Ketema & Diriba, 2021). Despite its low level of urbanization, the nation has the fastest rate of urbanization in sub-Saharan Africa. It is expected that this tendency will continue in the years to come. According to Mitiku and Mulatu (2021), Ethiopia's urbanization rate is expected to average 3.9% between 2015 and 2020, which is higher than the projected average growth rate of 3.1% for Africa.

Over the past few decades, Ethiopia has seen substantial urban growth that is marked by uncontrolled expansion, fast urbanization, and geographical inequities. For example, Addis Ababa, the nation's capital, controls a large portion of the urban population and economic activity in the country, making it the dominant city in the urban hierarchy. Population increase, better infrastructure, and government-led industrialization such as the industrial parks in Hawassa and Adama are all contributing to the quicker growth rates of secondary cities and emerging towns in the country (World Bank, 2020).

The number of people living in urban areas of Ethiopia is expected to triple over the next 20 years (UNDESA, 2018). In line with this, World Population Prospects (2019) reports that Ethiopia is currently among the nations with the fastest rates of growth in the and in the next 30 years, Ethiopia's population will double, reaching 210 million by 2060, if it continues at its current rate of development. Africa is predicted to contribute significantly to the world's population expansion during the next 40–50 years, with Ethiopia playing a major role. As **Fig. 2.4** illustrates with a higher rate of urbanization, Ethiopia is among the countries with the highest rates in Africa, East Africa, and the world. Urban centers have been expanding horizontally and new types of settlements have emerged in tandem with this rapid urban growth.

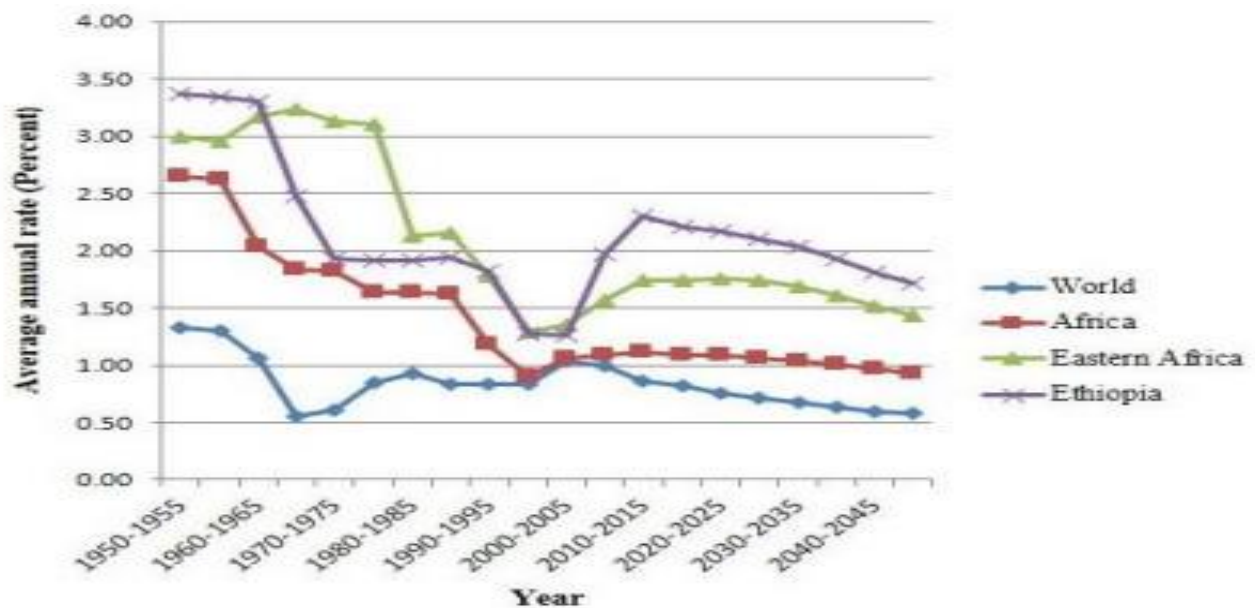


Figure 2.4 Global trends of urbanization growth rates from 1950 to 2050

(Source: UNDESA, 2018)

The average degree of urbanization in Sub-Saharan Africa (SSA) is 37%, but Ethiopia has one of the lowest rates at 23.1% (Weldegebrie et al., 2021). Nevertheless, the country's urbanization rate

(4.8%) poses a threat to its development since it lacks the political and economic institutions and planning expertise needed (Koroso et al., 2021). In line with this, Paul and Emily (2010) pointed out that migration from rural to urban areas, which led to urban development into peri-urban areas, and the natural increase in the number of people living in urban areas are the main causes of rapid urbanization. Migration is thought to play a great role in Ethiopia's urban growth dynamics and has contributed significantly to the urban population of the nation.

Migration is the primary driver of the rapid horizontal urban expansion from the urban center to the periphery, which accounts for the majority of urban population growth in most developing countries, including Ethiopia. Chandel and Mathewos (2023) found that a variety of factors, including natural population growth, rural-urban migration, and government policies that encourage urbanization and economic development, have contributed to the horizontal growth of urban areas in Ethiopia. Adam (2014) claims that a large amount of land from nearby peri-urban areas is required for residential and other urban uses because of the substantial and continuous urban population increase.

The Central Statistical Authority (CSA) of Ethiopia reports that migration has had a major influence on Ethiopia's urban population and is a major factor in the country's urban expansion. The nation has seen both urban-urban and rural-urban migration. Several studies revealed that the percentage of migrants in Ethiopian cities increased significantly. Rural-urban migration is becoming more and more common; over 73% of urban migrants came from rural areas, and over 40% of movers came from urban areas (CSA, 2008). According to the World Bank (2015), migration also contributed 30–37% of urban growth from 2007–2017 and will continue to contribute 38–48% until 2037.

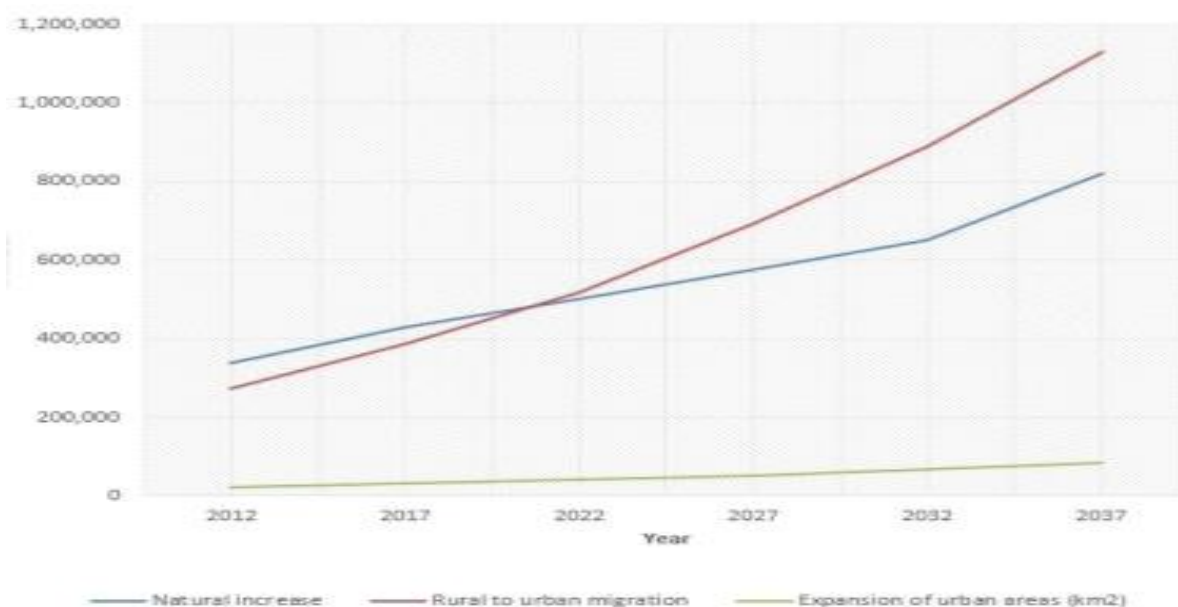


Figure 2.5. Urban population increase by urbanization factor (national) (2012-2037)

(Source: World Bank, 2015)

Fig. 2.5 shows that rural-urban migration has contributed more to Ethiopia's urban expansion than natural growth. Thus, by incorporating more land where people had previously made agriculture their primary source of income, urban centers have been physically extending their borders into neighboring rural and peri-urban areas.

Table 2.1. Population and urban extent growth rate of Sub-Saharan African urban centers (Case studies of Eastern African urban centers)

City Name	Country	Population (2019)	Urban Extent (hectares) 2019	Population Growth Rate % (2000–2019)	Urban Extent Growth Rate % (2000–2019)
Arua	Uganda	174,628	3,553	6.9	5.7
Jinja	Uganda	182,455	4,945	7.2	7.6
Mbale	Uganda	171,746	3,652	4.8	5.8
Gulu	Uganda	198,062	4,177	5.7	5.5
Dire Dawa	Ethiopia	182,455	4,946	7.1	7.6
Adama	Ethiopia	171,746	3,652	4.2	5.8
Jigjga	Ethiopia	198,062	4,178	5.5	5.5
Gabiley	Somalia	30,734	490	2.2	5.4
Borama	Somalia	174,628	3,554	6.2	5.7

(Source: Lamson-Hall et al., 2022, P. 15)

Table 2.1 displays the relationships between the population (due to migration) and the horizontal spatial development rate of urban centers in East African countries employed as case studies. Accordingly, a considerably higher rate of migration from rural to urban areas is contributing to the faster urbanization of major urban centers (Lamson-Hall et al., 2022). Data from recent studies evaluates the magnitude of this rural-urban migration and looks at how urban areas help in integrating these new migrants.

According to the case studies of satellite data analysis, these urban centers also have an average yearly rate of urban area increase of 6.1 percent and population growth of 5.2 percent. As the study indicates, these urban centers will, on average, double over the next 12 years if current trends continue. This indicates that urban centers are expanding at alarming rate in terms of both population and land area, which leads to urban centers absorbing new neighborhoods on the outskirts.

Finally, we can draw conclusion that migration-driven horizontal spatial expansion in Ethiopia is a result of the intricate interactions between rural-urban dynamics, socio-economic desires and demographic pressures. Ethiopia is one of Africa's fastest-urbanizing countries, and its urban areas are growing outward due to rural-to-urban migration, environmental stressor-induced displacement, and the need for job and education. Due to this horizontal expansion, peri-urban areas have seen rapid development but frequently unplanned development which is characterized by competing land uses, informal settlements, and fragmented infrastructure. Therefore, prioritizing integrated urban-rural planning that strikes a balance between ecological preservation and expansion is essential for Ethiopia in guiding migration-driven spatial growth toward sustainability. It is imperative to invest in climate-resilient infrastructure, strengthen land-use regulations to safeguard agricultural areas, and formally recognize the tenure rights of informal settlers.

2.4 Key Drivers of Migration and Urban Expansion

Despite the fact that the degree of influences varies from country to country, different scholars attempted to pinpoint the main causes of migration. In this regard, Hassan et al. (2020) noted that migration is a global phenomenon that is caused by both push and pulls factors. In this context, some of the push factors that lead people to move to a specific location include poverty, a lack of access to healthcare, a lack of employment possibilities, a lack of educational chances, and unfavorable situations. However, there are additional reasons why rural residents move to cities, like better access to healthcare and education, better employment prospects, better prospects for their children's futures, and many more.

According to Delango (2019), the reasons for migration especially to urban areas are more complex. People relocate for a variety of reasons. The two primary categories into which migration

motives are usually divided into push and pull factors. According to Everett Lee's theory, both push and pull factors influence migration, which is selective (Urbański, 2022). Furthermore, Bean and Brown (2014) identified that Lee classified four push and pull factors that influence people's migration decisions. First, the areas of origin; second, the areas of destination; third, individual factors; and fourth, factors related to intervening obstacles. Migration might therefore be considered a prudent decision undertaken by individuals to capitalize on opportunities that are inadequate in their home region.

Additionally, Abeje (2021) pointed out that a number of factors including push variables in rural areas and pull factors in urban areas contribute to Ethiopia's high rate of rural-urban migration. The primary drivers behind the rapid migration of individuals from rural to urban areas have been push pressures in the rural areas. The aim of this study is to identify the various key drivers of migration such as economic, social, environmental, political and civil conflict factors which are likely to influence people's migration decisions and their impact on towns' horizontal growth. All of these have the ability to affect a person's relocation decision and ambitions. Instead of being seen as these drivers as separate components, they should be seen as intricately linked parts that either supporting or hindering one another. The key drivers of migration include:-

Economic Drivers

Disparities in economic opportunities, particularly those pertaining to employment and income, have long been seen to be the primary drivers of migration. In light of this, Todaro and Smith (2009) asserted that moving from rural to urban settings is typically seen as a logical decision that is made after weighing the benefits and drawbacks. This model suggests that migrants respond to differences in expected rather than actual incomes between rural and urban areas, and they keep moving until the expected and actual incomes in each location are equal. Therefore, in this instance, the decisive factor is believed to be the individual's rational cost-benefit analysis of an existing wage disparity between their place of origin and destination, which acts as a proxy for better economic opportunities.

Furthermore, Hendersen (2010) claimed that when development grows more concentrated, rural communities are compelled to relocate and drive farther to urbanization centers. According to Ravenstein (1885), urban growth was mostly driven by rural-to-urban migration, and migration was primarily driven by economic factors. Clement et al. (2021) noted that the primary motivations for people to migrate to urban areas are personal fulfillment and seasonal economic gains. Given that Van Dijk and Fransen (2008) stated that poverty and persistent hunger are the primary drivers of Ethiopia's rapid urbanization, which drives people to move from rural to urban regions in pursuit of better job prospects.

The magnitude of migration depends on the quantity of opportunity. Accordingly, Stouffer (1940) asserted that the sum of the push and pull factors at the origin and destination areas determine the amount of migration. More opportunities attract more people and turn a place into a destination. Nevertheless, a place with limited prospects becomes the beginning point. Overall, it has been shown that lack of economic opportunities in the area or place of origin and/or the availability of better opportunities elsewhere are key drivers of rural-urban migration.

Social Drivers

Inadequate infrastructure and poor social services are factors that drive migration. Kassegn and Endris (2020) found that poor infrastructure and a lack of social services are the main causes of migration in rural Ethiopia in their review study on "Determinants of internal migration in Ethiopia." Farrell (2018) noted that poverty and a lack of basic utilities and other services are push factors that move individuals from rural areas to urban areas in quest of a higher quality of life. On the contrary, people from rural areas migrate to urban areas because of improved security, health care, education, and other urban amenities. People relocate to urban areas because they think they are centers of learning and development. According to Zhang (2016), urban areas are the driving forces behind social, cultural, and technological improvements and give more opportunity for learning and sharing.

Urban ward migration is influenced by a number of social factors, such as the availability of transportation facilities or the existence of pre-existing social networks that can facilitate the migratory transition (Haug, 2008 & Van Hear et al., 2018). For instance, social networking at the destination area (through friendships, family, and community relationships) can expedite the migration process by providing resources or useful information available and lowering the risks and expenses of relocation for potential migrants; consequently, social networks can help migrants find housing and employment in their new location (Cummings et al., 2015). Information accesses both before and during the migration process is crucial to lowering risks and providing the resources needed for the route.

Environmental Drivers

In recent years, environmental concerns have gained more attention in the context of migration, with soil degradation, drought or flooding, temperature or rainfall anomalies, and natural disasters all identified as factors contributing to large-scale migration flows. In this regard, Henderson et al. (2017) found that climate change has a significant impact on populations moving from rural to urban areas in Sub-Saharan Africa, with people in Ethiopia generally continuing to migrate from rural to urban areas to avoid unfavorable conditions.

Additionally, Getahun (2005) identified that the primary driving forces in Ethiopia include a diminishing amount and quality of arable land, persistent drought, violence, and other related problems. In light of this, Jabal et al. (2022) noted that rural livelihoods are challenged by the reduction in agricultural yields caused by climate change, especially in regions that are under moisture stress. Mass migration to urban regions is common because climate change is reducing farm output and making it more difficult to be self-sufficient in food. This will hasten urbanization, which is already occurring

According to Marchiori et al. (2012), Sub-Saharan Africa's seasonal variations in temperature and precipitation exacerbated both international and rural-to-urban migration. However, a favorable temperature and a pleasant metropolitan setting draw migrants to urban areas as pull factor. In this regard, Melesse and Nachimuthu (2017) and Obijekwu et al. (2019) noted that improved urban environments and a more favorable climate may also entice people to move to other metropolitan locations.

Political/ Government Policy as a Driver

One of the factors driving people to relocate in is government related projects linked to urban infrastructure such as roads, dams, industrial parks, slum improvement, or central urban area revitalization. Accordingly, Mohammed (2017) asserted that among the urban development projects in Ethiopia that led to migration were the developments of stadiums, health stations, roads, telecommunications, manufacturing industries, local government buildings, recreational spaces, and industrial parks. The nation's metropolitan regions have been growing horizontally as a result of all of these factors, which have increased demand for peri-urban land on the periphery.

According to Dires et al. (2021), Ethiopia's horizontal urban growth, is caused by the peri-urban families' farmland being taken away for infrastructure development, which forces them to migrate. In this context, Bekele (2005) noted that the primary drivers of Ethiopia's horizontal spatial growth include the country's growing population, rising household income, subsidies for road construction, inefficient land usage, social problems in major cities, and inadequate land policy..

Another factor contributing to the migration of people from rural to urban areas is the government's administrative reclassification of rural areas as urban areas. In this context, Ahmed and Ishrat (2020) claimed that the reclassification of rural areas as urban areas and the migration of people from rural to urban areas have been extremely important because they have altered the rapid expansion of urban centers and remain an essential link in the urban growth chain. Furthermore, Montgomery et al. (2013) pointed out that the reclassification of adjacent rural areas under urban

administrative settings as a site of expansion to meet the demands of urban land for a variety of activities is mostly the result of political or administrative processes.

Civil Conflict as Driver

Humanitarian crises, population displacement, and the destruction of livelihoods are all caused by civil conflict, which is a major contributor to forced migration worldwide. In this context, the UNHCR (2024) discovered that exacerbated vulnerabilities, systemic collapse, targeted persecution, and violence are the main causes of migration in civil conflicts. Thirteen million people were displaced from their place of origin to other areas of the world as a result of Syria's civil war, which lasted from 2011 to the present (UNHCR, 2024).

Furthermore, civil conflict in Ethiopia is a complex and significant factor in migration, leading to social breakdown, direct violence, livelihood devastation, created humanitarian crises, ethnic persecution, and displacement. According to the Internal Displacement Monitoring Centre (IDMC), hostilities in areas such as Amhara and Oromia, as well as the Tigray War (2020–2022), have continuously resulted in large-scale displacement (IDMC, 2024). The report also found that there were 2.4 million displaced individuals nationwide at the end of 2024, a decline from the previous year due to conflict and violence. This decline is partly due to the peace deal in November 2022 over the Tigray region, which has permitted some returnees despite ongoing insecurity and fighting.

To this end, a combination of economic, environmental, social, political and civil conflicts factors influences migration as a catalyst for spatial change, this in turn influences urban-rural dynamics and human settlement patterns. The growth of urban areas into peri-urban areas is fueled by economic differences, which also drive rural-to-urban migration. This frequently leads to horizontal sprawl, informal settlements, and strain on the infrastructure. Climate change, land degradation, and droughts are examples of environmental stressors that cause population displacement, rerouting migration flows to more livable or resource-rich places and hastening unplanned geographical development. The spatial expansion of destination centers is reinforced by social networks and familial relationships, which sustain migration corridors. Hence, in order to sustainably utilize these drivers' potential, policymakers need to implement multi-scalar and integrated approaches. The pressures of displacement and over-crowding in urban areas can be lessened by strengthening rural economies, and encouraging fair urban development.

2.5 Impacts and Implications of Migration at Place of Origin and Destination

Migration has an impact on the communities that people leave behind (their place of origin) and establish in (their destination). Through remittances and the transfer of skills, migration can help

alleviate poverty in the place of origin and ease the strain on local resources. Brain drain, labor shortages, and social disintegration are possible side effects, though, especially in rural communities where agriculture is the main source of income. Families that are left behind frequently experience emotional stress despite their financial gains. The following provides a detailed explanation of its impact.

2.5.1 Positive Implications on the Place of Origin

Migration has positive and negative effects (Withers, 2019). Positively, it may encourage migrants to send money back to their family back home. According to Ahmed et al. (2016), migration and remittances have a direct and indirect effect on the welfare of the population in the sending nations. Furthermore, his research claimed that the effect of remittances on asset accumulation differed according to the kind and volume of remittances as well as the economic and geographic conditions of the recipient households.

According to Hagen-Zanker (2015), in his research on the impact of migration and remittances on migrant-sending countries, both migration and migrant remittances assist rural farmers in developing countries in lowering risk and overcoming financial obstacles, allowing them to more easily adopt farming innovations. In line with his argument, migrants use their ideas, values, income, and skills to invest in land, purchase agricultural machinery or implements that improve cultivation practices and yields, fund their education so they can earn money off the farm, and buy cash inputs for agriculture.

Empirical research conducted in Ethiopia confirmed that migrants' remittances have significant impact in improving the livelihood. of poor rural population's For example, Wondimagegnhu (2012), in his study of the economic effects of rural-urban migration, found that remittances from migration increase the amount of capital stock, particularly in households that send short-term migrants as opposed to non-migrant sending households. Because of this, the households become self-sufficient and are able to invest more money in improving their families' quality of life.

Moreover, Obani and Odalonu (2023) in their study "Impact of Rising Migration on Socio-Economic Development," stated that migration involves the transfer of financial assets (including remittances), know-how, and skills for the individual family, household, society, economy, and development as a whole. In addition to remitting money to their place of origin, migrants also transferred capital, knowledge, and skills.

2.5.2 Negative Implications on the Place of Origin

Rural depopulation (population loss due to migration) and labor force participation are two ways that migration slows down population growth in the place of origin. In light of this, Grau and Aide (2007)

noted that young people particularly men usually work in labor-intensive employment in rural areas to provide for their families are highly affected. Besides, the study found that individuals of working age who migrate away from their parents may negatively impact their family's well-being and slow down the local economy.

Accordingly, Eshetu et al. (2023) claimed that rural out-migration lowers agricultural productivity and human capital in the areas of origin, which has a detrimental impact on the welfare of the sending households (loss of labor force). As a result, migration is not a vacuum in the places where migrants are sent; rather, it entails giving and receiving. According to this, migration lowers labor forces and agricultural output while simultaneously providing remittances and other benefits.

Additionally, Poston and Bouvier (2010) noted that because of migrants to urban areas are typically young adults, the reproductive capacity of the population at origin is likely to be diminished. Miheretu (2011) in his study on the causes and effects of rural-urban migration found that the sending rural areas had a higher concentration of older age groups, which may be a sign of a lower fertility rate. In light of this, a decline in rural production and an aging population are the results of the movement of a youthful, productive labor force to economically reliant urban centers.

In addition, migrants are compelled to adapt to their new urban environments and lose the lifestyles, traditions, and cultures they had back home. In this context, Belay (2011) noted in his research on the push and pull elements of rural-urban migration and its effects on the place of origin that people are acclimating to a new environment with a different physical layout and culture when they move from rural to urban areas. Their encounters with people in the urban environment would cause them to lose their traditional culture.

Migration presents emotional costs to communities that send migrants as well as challenges to social structure. Baby and Basheer (2024) concluded that communities with high emigration rates face many challenges to their social systems as a result of migration, and that the families of migrants may be disrupted by the absence of one or more family members for extended periods of time, which may have a negative impact on parent-child relationships and conjugal relationships. They also found that migration has the ability to drastically alter traditional gender roles, community norms, and family structures. Because of this, women often take on more duties when their husbands move, and they may not want to relinquish their new role when they return. According to D'Emilio et al. (2007), moving to a new place and being apart from one's close family has a big emotional cost.

2.5.3 Positive Implications on the Place of Destination

Migration may have a positive economic impact on destination areas. According to Berisso (2023), the economic advantages of migration for the destination areas raise the supply of labor and stimulate demand for necessities, which in turn increases employment and production and improves the local economy. Moreover, McAuliffe and Oucho (2024) pointed out that migration can also benefit the labor market by boosting the supply of workers in industries and professions where there is a labor shortage in urban areas. Consequently, it helps to rectify mismatches in the labor market. Their research suggests that these favorable labor market impacts may occur in both high-skilled and low-skilled industries.

Migration increased cultural diversity and cohesion in migrant receiving areas. Norris and Inglehart (2019), Guriev and Papaioannou (2022), and Rodrik (2021) assert that migrants are social change agents, altering the cultures of the societies they inhabit by assimilating and disseminating the norms and values they were raised with. This demonstrates how migration makes migrant cultures more integrated into the host communities and accelerates the process by which migrant groups adapt to the norms of their new environment.

Furthermore, UNESCO (2009) highlighted that the role of migration in maintaining multicultural societies, and events like festivals and culinary scenes in cities like London or Toronto are examples of how migrant influences attract global interest and economic activity. Migration brings cultural diversity to destination areas, fostering social vibrancy and cross-cultural understanding. The introduction of diverse traditions, cuisines, and artistic practices by migrants enriches local culture and often boosts tourism.

In many destination areas, migration reduces the burden on healthcare and pension systems by counteracting the aging population. A balanced workforce that supports intergenerational solidarity and dependency ratios is facilitated by younger migrant populations. In this context, the United Nations Department of Economic and Social Affairs (UNDESA, 2017) pointed out that migration is essential for maintaining long-term economic stability and demographic resilience in areas with low birth rates. This demographic inflow promotes intergenerational cultural interchange and maintains public services.

2.5.4 Negative Implications on the Place of Destination

People moving to urban areas in most emerging countries including Ethiopia create a number of social, economic, and environmental issues. For instance, Ethiopia's growing urban ward migration is contributing to the country's increased urban poverty, overcrowding, environmental pollution, poor sanitation, overcrowded housing, traffic jams, traffic accidents, and criminal activity (Abdul & Yu,

2020). The same situation exists in South Africa, where an increasing number of new migrants make city living challenging and add to the nation's unemployment rate (Chokoe & Meso, 2017). Urban poverty eventually rises as a result of migration and continuous urban population growth.

Even though migrants have a positive impact on urban economic development, socio-economic development is under strain as more people move into urban areas that receive migrants. For example, the urban areas of Ethiopia are facing issues such a shortage of essential services, pressure on job opportunities, and the rise of informal businesses all of which pose a risk to the formal business sector (Berisso, 2023). According to Evers (2012) and Habtamu (2015), the supply of jobs and educational opportunities is strained as people migrate to destination places. As a result, there are not enough job opportunities to handle the influx of many migrants, which has an impact on essential services like housing, healthcare, and schools.

Migration has negative impact on basic infrastructure services, urban resources, and structural alterations in destination places. Consequently, a sizable portion of the rural population has moved to the urban area, and structural changes have resulted in high densities and strain on urban resources, infrastructure, and land (Malik et al., 2020).

The delivery of services and depletion of infrastructure have an impact on urban areas' ability to produce, business growth, and living circumstances (Ghafoor et al., 2021). These issues are now evident in the majority of Ethiopia's urban areas. Rana and Bhatti (2018) thus confirmed that Ethiopian urban areas also face the challenge of inadequate infrastructure and urban management competencies.

From the discussion so far, we can conclude that migration offers both the origin and destination areas a complex interplay of opportunities and challenges. At the places of origin, migration reduces unemployment and promotes remittance-driven development, but it can also cause family separation and economic dependence on migrant incomes. In destination areas, migration promotes demographic stability, cultural diversity, and economic progress, but it also runs the danger of taxing public resources, escalating social unrest, and warping labor markets. Therefore, balancing these effects demands inclusive policies that minimize drawbacks through collaboration, ethical labor standards, and investments in sustainable development while optimizing advantages like skill-sharing and equitable integration.

2.6. Definition and Concepts of Remittance

Remittance has no widely agreed-upon definition. Remittances are defined differently by various academics. For example, Murphy (2024) defined it as the cross-border movement of funds between two parties. There are various ways to send money to another nation, including wire transfers,

checks, drafts, and mail. Although remittances can be used for any kind of payment, including invoices, they are usually used to support or pay family members back home.

Baruah (2006) defines remittances as the financial transfers made by migrants to their home countries, often known as financial flows related to migration. Remittances are typically personal cash transfers made by migrant workers or immigrants to family members back home of their country of origin. Additionally, the migrant may donate, deposit, or invest these funds in their home nation. The concept might be changed to encompass donations and in-kind personal transfers. Additionally, some researchers incorporate social remittances, technological transfers, and talent transfers.

Remittances are defined as "financial and in-kind transfers from migrant individuals back to their countries of origin" (Adams, 2011). Geda et al. (2011) pointed out that remittances are "transactions that are initiated by individuals living or working outside their country of birth or origin and related to their migration." Kapur (2003) adopts a similar conception of remittances as financial resource flows arising from the cross-border movement of nationals of a country.

2.7 Pattern and inflows of Remittance

A vital and reliable source of external funding for many emerging economies is remittances, or the money that migrant workers send home to their families and communities back home. Global remittance inflows frequently equal or surpass foreign direct investment (FDI) in low- and middle-income countries (LMICs), and they have continuously outpaced official development assistance (ODA). These flows show clear geographic concentrations, with the highest shares continually going to South Asia, East Asia and the Pacific, and Latin America and the Caribbean (World Bank, 2023).

Remittances show countercyclical tendencies in recipient economies, frequently rising in periods of natural disaster or economic distress to boost healthcare, education, and consumption (Ratha, 2003). With the emergence of digital remittance platforms, the conventional channeling through formal operators such as banks and money transfer services is changing, affecting accessibility, speed, and cost. If policymakers want to use remittances to boost economic growth and alleviate poverty, they must have a thorough understanding of their size, drivers, trends, and use (World Bank, 2021; World Bank, 2023).

2.7.1 Global inflows of Remittance

Global migratory patterns have grown dramatically as a result of globalization and transportation advancements (Mekonnen et al., 2011). To take advantage of opportunities in the host nations, people may temporarily or permanently leave their place of origin. These opportunities may arise from social, political, economic, environmental, or a mix of these variables. Some of the driving and pulling factors for international migration include the alluring wage disparities between developed

and developing nations, the developed world's welcoming immigration policies, the absence of democracy and sound governance in the home countries, poverty, and environmental degradation in the home countries (Portes, 1996).

Remittance flows for families back home in the poor countries come from both domestic and foreign migrants. The main source of foreign cash for many developing nations is overseas remittances, which surpass export earnings, foreign direct investment (FDI), and other private capital inflows (World Economic Outlook, 2005). According to Kapur (2003), one of the most obvious—and advantageous—way that international migration is changing the nations of origin is through remittances. They are the most visible example of self-help actions conducted by low-income households worldwide and are subtly changing societies and geographical areas in a number of contexts. Furthermore, owing to its global economic effect, remittance inflow is seen as a substantial source of revenue and is not just a recent financial phenomenon (Meyer & Shera (2017).

Due to its significance as a source of international capital flows and its stability in comparison to other flows like foreign direct investment (FDI), foreign loans, etc., remittance inflow has drawn a lot of attention from scholars, researchers, and policy makers since the 1970s. In 2009, remittances surpassed foreign direct investment (FDI) in some countries and represented a resource inflow that frequently outstripped a range of other balance of payments flows in a sizable number of developing nations (IMF, 2009).

Remittances are the world's main source of international financial resources, and they can occasionally be the cause of a rise in foreign direct investment (FDI). The inflow of remittances is not only a recent development in finance, but it is also regarded as a major source of income because of its global economic influence (Meyer & Shera, 2017). Remittance inflows have a favorable effect on human welfare and development and are three times greater than the amount of government development support. The main way to reduce poverty and give impoverished families the money they need to start a small business is through remittance inflow (Second International Handbook on Globalization, Education, and Policy Research, 2015, cited in Ahmad et al., 2019).

The amount of foreign remittances that poor nations receive is anticipated to have doubled over the past five years, reaching approximately USD 167 billion in 2005 (Lowell, 2002). Additionally, World Bank (2011) estimated that the total amount of international remittances transferred to developing nations in 2008 was 325 billion USD. With 86 billion, East Asia and the Pacific received the most, followed by South Asia with 72 billion, while sub-Saharan Africa only received 21 billion.

Remittances from migrants are one of the main sources of foreign exchange for underdeveloped nations. In 2010, developing nations provided 80% of the world's migratory labor force and received almost 75% of all remittances (Imai et al., 2014; World Bank, 2012). Over the past three decades, migrant remittances have increased by more than 20 times. According to data, in 2010, global remittance flows totaled over USD 440 billion, of which USD 325 billion went to developing nations (Nyamongo et al., 2012). This amount increased to USD 350 billion, exceeding the amount of official aid flows by a significant margin and accounting for more than 10% of the GDP in many developing nations. It is also clear that remittances to developing nations in 2009 were almost three times as large as foreign aid and nearly as large as foreign direct investment flows to developing nations; this figure only represents official statistics; it is highly likely that additional remittances in the billions were sent through unofficial channels (Nyamongo et al., 2012).

The Western Hemisphere and developing Asia in particular have seen a significant increase in remittance inflows, and they currently make up the majority of total remittance receipts (World Economic Outlook, 2005). Accordingly, Gupta et al. (2009) found that remittance flows differ significantly by region, with remittances to countries in Latin America, the Caribbean, and East Asia and the Pacific growing faster than the average for developing countries overall since the 1980s. Furthermore, according to Ninna (2004), cited in Asmellash (2006), Latin America and the Caribbean (LAC) receive the largest share of remittances, accounting for approximately 31% of total flows. South Asia comes in second with 20%, followed by the Middle East and North Africa (18%), East Asia and the Pacific (14%), Europe and Central Asia (13%), and Sub-Saharan Africa 5%.

Between 2009 and 2012, the amount of money sent to East and South Asia went from US\$ 316 billion to USD 406 billion, and in 2015, it reached USD 434 billion (Imai et al., 2014; World Bank, 2012). Moreover, the World Bank (2018) calculated that remittances to developing nations have been growing over time, reaching USD 689 billion in 2018 and USD 715 billion in 2019, making them their main source of external funding (World Bank, 2019).

Regionally, remittance inflows increased for Sub-Saharan Africa (1.9%), East Asia and the Pacific (3%), South Asia (7.2%), and Latin America and the Caribbean (8%). On the other hand, flows to the Middle East and North Africa decreased by 5.3%, mostly as a result of a steep decline in flows to Egypt. Additionally, after increasing by over 18% in 2022, remittances to Europe and Central Asia decreased by 1.4% in 2023 (World Bank, 2023).

Remittances to developing nations totaled USD 80 billion for India, USD 67 billion for China, USD 34 billion for the Philippines and Mexico, and USD 26 billion for Egypt. With the exception of

China, remittance inflows to low- and middle-income nations (USD 462 billion) were significantly more than FDI flows in 2018 (USD 344 billion) (World Bank, 2019).

The World Bank and KNOMAD (2022) report that the top 10 developing nations that receive remittances are as follows: India (USD 100 billion), followed by Mexico (USD 60 billion), China (USD 51 billion), the Philippines (USD 38 billion), Egypt (USD 32 billion), Pakistan (USD 29 billion), Bangladesh (USD 28 billion), Nigeria (USD 20 billion), Vietnam (USD 19 billion), and Guatemala (USD 18 billion) respectively. According to the same sources, the United States (USD 79 billion), Saudi Arabia (USD 39 billion), United Arab Emirates (UAE) (USD 29 billion), Germany (USD 25 billion), United Kingdom (USD 20 billion), Kuwait (USD 15 billion), France (USD 14 billion), Qatar (USD 13 billion), Canada (USD 12 billion), and Italy (USD 15 billion) are the top 10 countries that send remittances (outflows) to developing nations.

The main countries in South and Southeast Asia that supply migrant laborers who are dispersed globally, and especially to Middle Eastern nations, are India, the Philippines, Pakistan, and Bangladesh. In the past three decades, remittance flows to these nations have increased dramatically (Chowdhury, 2011). Based on the aforementioned remittance inflows to developing nations, India continues to be the top recipient of remittances, with inflows of \$100 billion in 2022, fueled by its sizable diaspora in the Gulf, the United States, and Europe. Mexico and China come in second and third, respectively, with sizable inflows from their diaspora in the United States and other developed economies, while nations such as the Philippines, Egypt, and Pakistan continue to rank highly because of their sizable populations of foreign workers (World Bank, 2022).

The United States leads the world in remittance outflows to developing nations due to its large immigrant population and close economic ties with these nations; the Gulf countries of Saudi Arabia, the United Arab Emirates, Kuwait, and Qatar are major remittance-senders because of their large expatriate workforce from South Asia, Southeast Asia, and Africa; and the European countries of Germany, the United Kingdom, France, and Italy are major remittance-senders because of their large immigrant populations from developing nations.

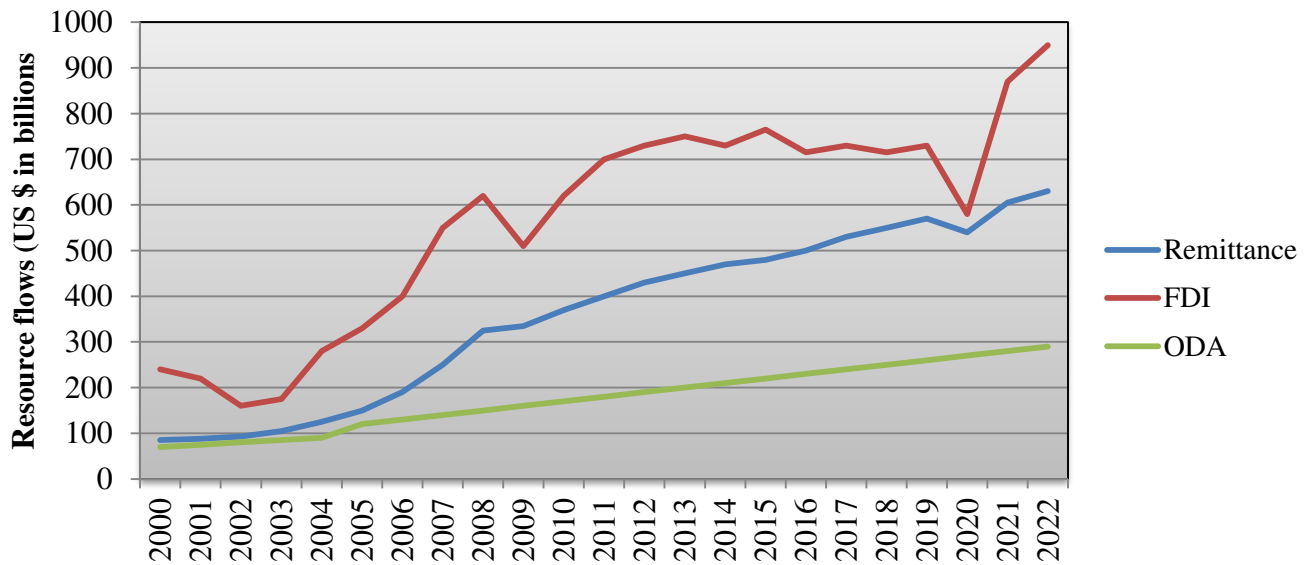


Figure 2.6. Remittance inflows to developing countries compared with other resource flows

(Sources: Own development by extracting data from WB, KNOMAD, IMF, UNCTAD, 2000-2022)

Figure 2.6 illustrates how remittances, which frequently surpass official development assistance (ODA), are a vital source for many developing nations. Migration-related remittances are also dependable sources of foreign exchange profits since they are less erratic and more consistent than other external flows. The data also indicates that, in response to rising migration, remittance inflows to poor nations have surged dramatically since 2000. Except for 2020, when there was a drop in the flow, remittances have been increasing consistently, demonstrating their resistance to global challenges. Remittances experienced a minor decline in 2020 due to the COVID-19 epidemic, but they recovered strongly in 2021 and 2022 as a result of resilient migrant workers and supporting policies.

2.7.2 Overview of Migration and Remittance inflows in Africa

According to IOM (2023), 53% of the 40 million foreign migrants living in Africa migrate within the continent. Conversely, more than 60% of LDCs are found in sub-Saharan Africa (SSA). As of 2000, the International Labour Organization (ILO) estimated that there were over 16 million migrants in Africa, with 5.4 million of them being migrant workers, or 9% of all migrants worldwide (Baruah, 2006).

Economic inequality, political unrest and instability, and climate shocks are the main causes of African migration. For example, the majority of people in these regions migrated as labor migrants due to the salary disparity between Europe and the Gulf nations and Africa. In war-torn countries like

Sudan and the Democratic Republic of the Congo, more than 30 million Africans are internally displaced (UNHCR, 2023). Remittances are certain to continue to be a significant and significant flow since African migration is generally increasing (Asmellash, 2006). Remittances are a vital source of outside funding in Africa, frequently surpassing official development assistance (ODA) and foreign direct investment (FDI) (World Bank, 2023).

Furthermore, Rapoport and Docquier (2001) pointed out that remittances have a considerable impact on Africa's national balance of payments and are a major source of foreign exchange. Moreover, they may surpass other financial flows and account for a sizable amount of GDP in many nations. As an illustration, in 1999, remittances to Cape Verde accounted for 51% of exports and 12% of GDP, Comoros for 24% and 6%, Egypt for 26% and 4%, and Morocco for 18% and 5%. Funds from remittances are an essential source of income for the recipients and have a significant income-smoothing effect.

Remittances to Sub-Saharan Africa (SSA) have been a part of the growing global trend; since 2000, remittances to SSA have increased by more than 55% in USD, while remittances to developing countries as a group have increased by 81%. In 2005, remittances to 34 SSA countries were estimated to be approximately USD 6.5 billion. Remittance flows to SSA are relatively small, accounting for only 4% of all remittances to developing countries, and only 33% of those to India, which received the most (Sanjeev et al., 2007).

According to the World Bank (2023), ADB (2023), and IMF (2023), remittances are a lifeline for many SSA economies, contributing significantly to GDP in several countries. For example, in Lesotho, remittances accounted for 21% of GDP, mainly from mineral workers in South Africa; in Gambia, 15% of GDP, driven by diaspora in Europe and the U.S.; Comoros, 12% of GDP, with inflows from migrants based in France; Senegal, 10% of GDP, tied to migrants in France and Italy; and Kenya, 3% of GDP, supporting SME's and household consumption.

Remittances to Sub-Saharan Africa (SSA) totaled over USD 53 billion in 2022, of which USD 20.1 billion came from Nigeria alone. With USD 32 billion, North Africa and especially Egypt was the continent's biggest recipient. Remittance inflows to Ethiopia increased significantly throughout that time, growing by 16% (World Bank, 2023). This suggests that the four nations in Sub-Saharan Africa that receive the most remittances are Nigeria, Ghana, Kenya, and Senegal.

In Africa, remittance inflows are distributed differently by region. For example, Nigeria is the largest country in West Africa, followed by Ghana (4.7 billion) and Senegal (2.7 billion); Kenya (4.2 billion) and Somalia (1.7 billion) in East Africa which depend on diaspora in the United Arab Emirates and the United States; Zimbabwe (\$2.0 billion); and Lesotho (25% of GDP from remittances) primarily from miners in South Africa. In North Africa, Egypt and Morocco add \$11 billion originated from diasporas in Europe and the Gulf in 2022 (ADB, 2022; World Bank, 2023).

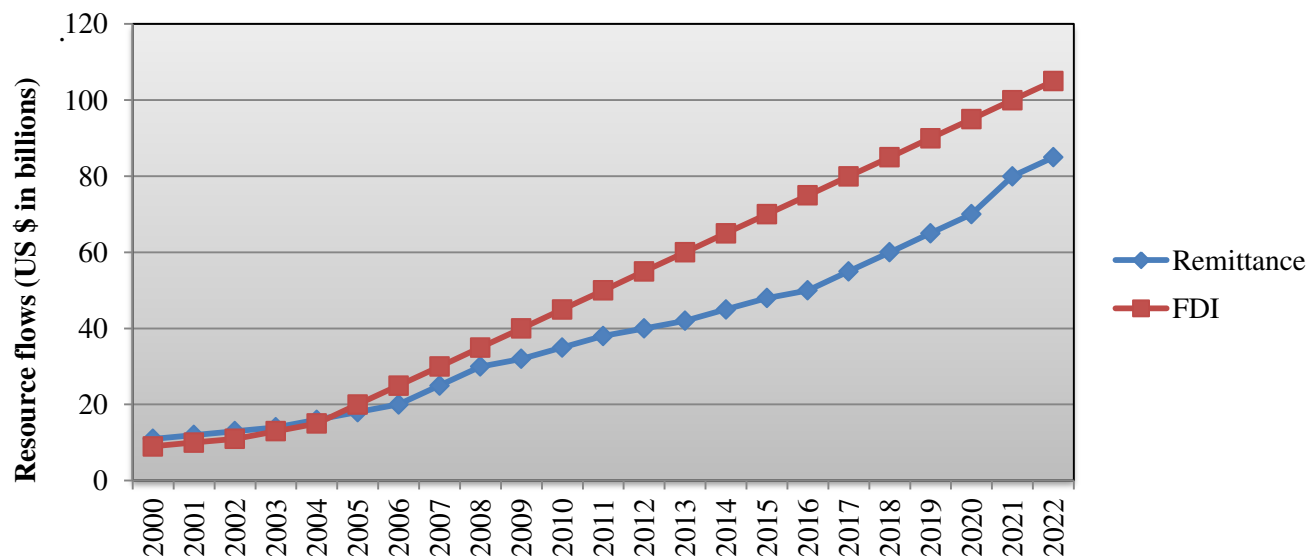


Figure 2.7. Remittance inflows in Africa compared with FDI

(Sources: Own development by extracting data from WB, KNOMAD, IMF, UNCTAD, 2000-2022)

Remittance inflows to African nations have expanded dramatically since 2000, as seen in **Fig. 2.7**. This growth is a result of improved remittance channels and increasing migration, which frequently surpasses foreign direct investment (FDI) between 2000 and 2004. In addition, external flows are less erratic and predictable, and they are dependable sources of foreign exchange profits. Remittance flows to Africa have remained robust in the face of global concerns such as the COVID-19 epidemic, thanks to contributions from the diaspora and digital remittance platforms.

To sum up, for millions of people in Africa and SSA, remittances represent a lifeline and a cornerstone of the continent's economy. They directly support livelihoods and macroeconomic stability, but their potential is limited by high costs and regulatory obstacles. Sustainable development requires addressing the underlying reasons of migration (such as conflict and climate change), interacting with Diasporas, and bolstering digital infrastructure.

2.7.3 Migration and Remittance inflows in Ethiopia

Ethiopia has many migration dynamics and patterns, which have important political and socioeconomic implications for the nation. One of the largest populations of Africans resides in Ethiopia, which surely influences the government's efforts to reduce poverty and promote sustainable development (Mekonnen et al., 2011).

Ethiopia has a high rate of out-migration due to environmental stressors, political unrest, and economic difficulties (IOM, 2021). Geda and Irving (2011) claimed that the country's political unrest and upheaval influenced migration patterns in the 1970s. Furthermore, according to Getachew (2009), networks, labor brokers, smugglers, traffickers, and family relationships are the main ways that people migrate from Ethiopia to other countries. These days, conferences and business meetings are also turning into a significant source of migration.

The nature, trajectory, and magnitude of Ethiopia's international migratory patterns have seen several transformations within the last forty years. During this period, the majority of migrants were urban, well-educated members of the population who came to western nations in search of political immigration. The aspirations of the urban population initially fueled political migration, which was followed by more economically oriented movement (Geda and Irving, 2011).

Many Ethiopians, both professional and unskilled migrants, go across borders both legally and illegally these days in search of better economic prospects (Aredo, 2005). According to the United Nations (2008) Revised Population Database, there are 546,000 Ethiopian migrants living around the globe. This estimate, however, is extremely low in comparison to the Ministry of Foreign Affairs' estimations, which can occasionally amount to as much as 1.5 million.

The 2007 Census of Population and Housing found that Ethiopia's population was increasing by almost 2 million annually. Accordingly, around 120,000 Ethiopians departed their nation annually. Furthermore, Gezahegne & Bakewell (2022) pointed out that there is a sizable Ethiopian diaspora, with estimates indicating that over 2 million Ethiopians live overseas, mostly in North America, Middle East and the Gulf, and Europe. It is noteworthy that remittances from this diaspora contribute about 5% of Ethiopia's GDP and roughly 25% of its foreign exchange profits.

One of the top ten remittance destinations in Sub-Saharan Africa is Ethiopia, and these resources have grown to be a significant source of foreign exchange and a source of income for many households (Adugna, 2018). Given this, Aredo (2005) claimed that it is generally accepted that migrant remittance inflows constitute a substantial source of income for Ethiopian households. Remittances are mostly used as tools for risk mitigation and as a buffer against outside shocks. Furthermore, Asmellash (2006) said that one of the developmental consequences of migration in

Ethiopia is remittances, which are felt most noticeably at the home or individual level but also at the communal or national level.

Inflows of remittances from Ethiopians residing outside have grown dramatically, benefiting both the government and the families of individual employees. Ethiopian contracts and illegal migration to the Middle East, Gulf States, and other parts of the world have expanded significantly since the military government was overthrown in 1990 (Demissie, 2018). Furthermore, according to Isaacs (2017), migrant remittances in Ethiopia support more than 5% of the nation's GDP and 25% of its foreign exchange revenues. The country's export revenue in the first 10 months of 2016 was less than the value of incoming remittances. Additionally, for many individual beneficiaries, remittances are a crucial source of income at the household level.

As **Fig. 2.8** makes evident, remittance inflows are crucial to the nation and grew steadily between 2000 and 2022 in comparison to other resource inflows, surpassing even official development assistance (ODA), with the exception of a minor drop in 2020 brought on by the COVID-19 pandemic.

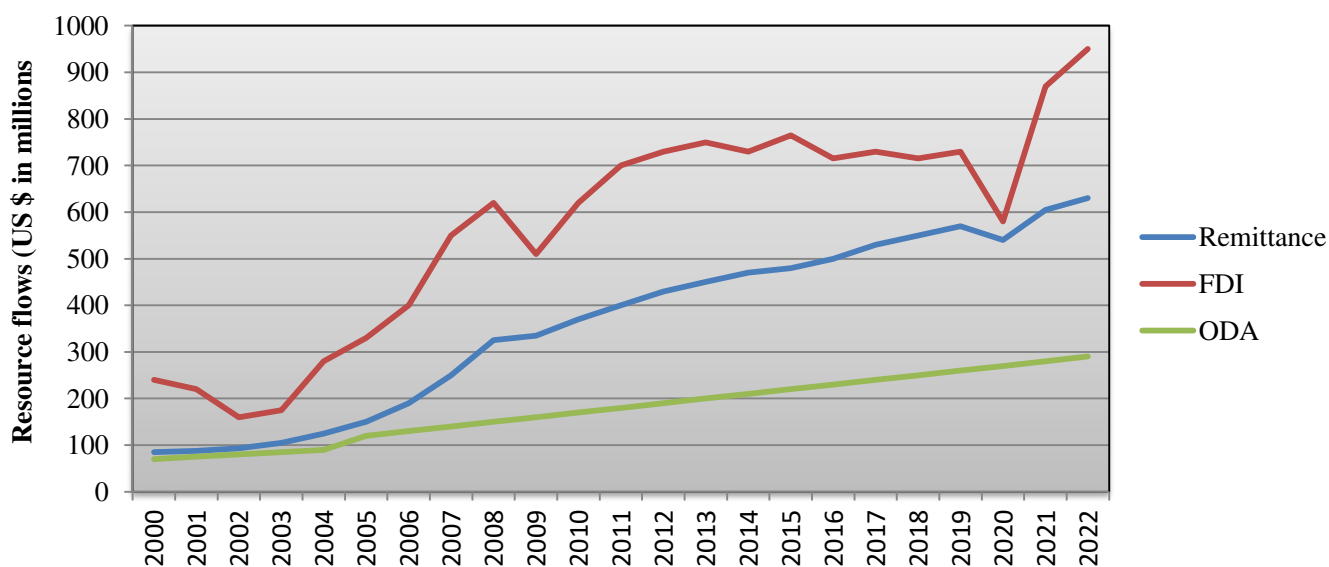


Figure 2.8. Remittance inflows in Ethiopia compared with other resource inflows

(Sources: Own development by extracting data from WB, KNOMAD, IMF, UNCTAD, 2000-2022)

According to NBE (2022), remittances are Ethiopia's main source of foreign exchange, outpacing exports like coffee. Although informal channels may quadruple this amount, official remittances in 2022 amounted to \$4.2 billion, or 5% of GDP. In areas like Amhara and Oromia, these flows lower poverty by stabilizing households, supporting small enterprises, and funding healthcare and education (EEA, 2022).

It is extremely challenging to determine the precise volume of remittance inflows from Ethiopian migrants, and there are discrepancies in the recoding of remittance data between the World Bank and NBE. This is because migrants have the option of sending their money home through both official and unofficial channels. A primary cause of this disparity is the fact that payments made via unofficial channels are frequently exceedingly challenging to record (Haile & Litchfield, 2019).

Fig. 2.9 below shows the remittance patterns in Ethiopia from 2005/06 to 2016/17 based on data from the World Bank and NBE. Since 2008/09, the total remittances reported by NBE have increased steadily, as can be seen. Remittances received by the nation, according to World Bank estimates, are significantly less than what the National Bank of Ethiopia (NBE) reports.

Based on data from the World Bank on migrant remittances, Ethiopia received 772 million USD in remittances in 2017. Furthermore, the graph presented by the World Bank showed that the quantity of remittances received by the nation from foreign-based migrants has begun to decrease since 2014. NBE acknowledges, however, that these figures understate the true amount of remittances that enter the nation. This suggests that the NBE and World Bank have different remittance statistics depending on which source is used, which suggests that more research is needed to better understand and enhance Ethiopia's remittance data.

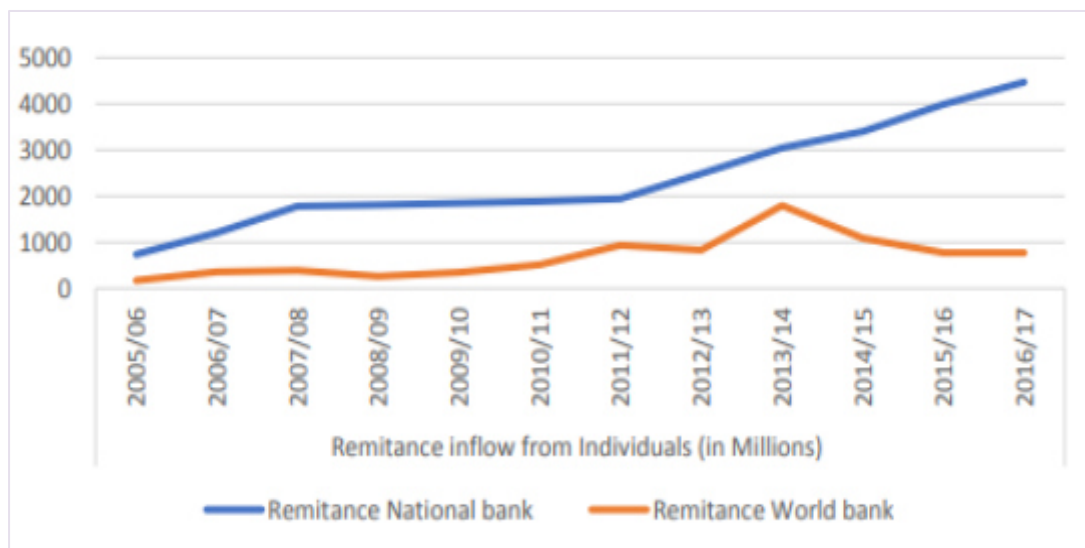


Figure 2.9. Ethiopia remittance inflow from individuals (in millions)

(Source: National Bank of Ethiopia and the World Bank Migration and Remittances Data adopted from Haile & Litchfield, 2019, P.9)

Comparing Ethiopia to other SSA nations, official remittance inflows are still lower. The World Bank recorded \$504 million in remittance inflows in 2020, although the National Bank of Ethiopia estimated inflows of roughly \$2.5 billion. This disparity demonstrates the important part that unofficial channels play in sending money to Ethiopia. Saudi Arabia and the United States rank

among Ethiopia's top five send markets, notwithstanding their differences, according to both data sources (NBE, 2020; World Bank, 2020).

We can conclude from the discussion so far that even though remittance inflows have increased in Ethiopia, it is crucial to remember that the country's remittance data differ from the literatures shown above because of variations in reporting standards, the inclusion of informal transfers, and the approaches taken by various organizations. In Ethiopia, the relationship between migration and remittances is mutually reinforcing, with remittances maintaining economic stability while reducing the underlying causes of migration. To optimize developmental advantages, formal channels must be strengthened, transfer costs must be decreased, and diaspora expertise must be utilized.

Comprehending the complex interplay between migration and remittance inflows within the nation is crucial for developing policies that capitalize on their advantages while mitigating any possible disadvantages. Remittances' beneficial effects on Ethiopia's development path can be amplified through strategic actions. Diasporas in North America and the Middle East are the main source of Ethiopia's important remittance inflows. Even while issues like informality still exist, government measures are meant to capture these flows for long-term growth. Better financial inclusion and the development of diaspora trust are essential for future progress.

Destinations and Routes of Ethiopian International Migrants

Ethiopia has a long history of international migration and is a major source of global migration, which is fueled by political unrest, geographic factors, environmental disasters, and economic factors. Ethiopian migrants take a variety of regular and illegal migration routes to reach their destinations (De Regt, 2010).

According to CSA (2021), Saudi Arabia, South Africa, the United Arab Emirates and the United States accounted for 30.7%, 12.4%, 8.9%, and 8.3% of Ethiopia's international migrants destinations, respectively. Ethiopians who migrate abroad typically follow three main migration routes. First, Ethiopians have been migrating to the Middle East via the eastern corridor since the 1990s, making it the busiest migration route (MoLSA, 2018). Second, Ethiopian migrants hardly ever use the northern migration corridor to travel to Libya and Europe via Sudan (Massey & Parrado, 1998). Third, the Horn of Africa to South Africa is the southern migrant corridor. The key destinations and routes of Ethiopian international migrants are briefly discussed below

Middle East (Gulf Cooperation Council - GCC countries)

The greatest of these destinations is Saudi Arabia, which is home to 750,000 Ethiopian migrants, the majority of whom are women employed in domestic work. Other destinations include the United Arab Emirates, Qatar, Kuwait, and Lebanon. In the United Arab Emirates (UAE), Qatar, and Kuwait, the majority of migrants are seeking low-paying jobs in the hospitality and construction industries (IOM, 2023). Prior to the economic collapse in 2020, Ethiopian women were employed as domestic workers in Lebanon (Human Right Watch, 2019). Furthermore, Kuschminder and Siegel (2014) noted these destination regions are the main migration corridor for Ethiopian migrants, with half of all current migrants having migrated to the Middle East and 58% of return migrants having done so, with Saudi Arabia being the most popular destination.

The Eastern Route, which connects Ethiopia with the Middle East via Djibouti or Somalia, is a popular irregular migration route. Along the way, migrants frequently encounter difficult circumstances, including as abuse and human trafficking. Accordingly, the Regional Mixed Migration Centre (RMMS) (2018) found that migrants illegally enter Yemen through Somalia or Djibouti, frequently smuggling through Obock (Djibouti) or Bossaso (Puntland). They travel to Saudi Arabia from Yemen.

Africa

According to Kuschminder and Siegel (2014), Ethiopian migrants frequently choose this region as a transit country while attempting to go to the North as well as a place to settle and find employment. South Africa, Kenya, and Sudan are among them: For Ethiopian migrants, Sudan is both a destination and a transit nation. Many Ethiopian migrants come to South Africa in search of work, frequently starting small enterprises. The two main countries from which migrants come to South Africa are Ethiopia and Somalia; two thirds of all migrants from the Horn of Africa come from Ethiopia alone (Horwood, 2009). According to the Ethiopian Ministry of Foreign Affairs, over 120,000 Ethiopians reside and work in South Africa (Zewdu, 2018). On top of that, Teye (2021) found that the majority of Ethiopian migrants in South Africa are men who operate in informal trade (spaza shops).

The Northern Route connects Africa's Horn to Europe, whereas the Southern Route connects Ethiopia to Southern Africa. Using the northern route, Ethiopian migrants pass Libya and Sudan on their way to Europe via the Mediterranean Sea. Many of them run the risk of being detained in Libya and having to make perilous sea crossings. The Southern route involves migrants traveling to South Africa by land via Kenya, Tanzania, Malawi, Zambia, or Mozambique. There are many dangers along this trip, including exploitation and human trafficking, the majority of migrants using unofficial buses, and border bribery (Tiruneh, 2020).

Europe and North America

Both North America and Europe are included in these travel destinations. North America comprises the United States and Canada as destination regions, whereas Europe comprises Germany, the United Kingdom, Italy, and Greece. Asylum seekers and skilled Ethiopian migrants are drawn to these nations. Through skilled migration programs, refugee resettlement, and family reunification, Ethiopian migrants come to this country (UNHCR, 2022). Additionally, Kuschminder and Siegel (2014) pointed out that Ethiopian migrants to the North have greater educational attainment, are more likely to migrate lawfully, and are likely to remain for a longer period of time.

Ethiopian migrants use the Northern Route, which stretches from the Horn of Africa to Europe via Sudan and Libya. Many of them risk incarceration in Libya and make perilous sea crossings. They attempt to go from Libya to Italy or other southern European nations by crossing the Mediterranean Sea. Egypt is a different transit country that some people use before traveling to Europe. (Thiruneh, 2020)

Finally, through various paths influenced by political, economic, and geographic circumstances, Ethiopian migrants travel to a variety of places, including the Middle East, Europe, and African nations like South Africa and Kenya. The Northern Route to Europe travels through Sudan and Libya, the Southern Route to South Africa travels through several African countries, and the Eastern Route to the Middle East crosses Yemen.

For Ethiopian migrants, these many routes offer opportunities as well as perils. Furthermore, Ethiopian migrants use dangerous land and maritime routes to mainly target the Middle East and Southern Africa. Even though these migrants' remittances support households (accounting for 5% of GDP), structural safeguards are desperately needed to prevent exploitation and human trafficking. To address the issues surrounding Ethiopian international migration, bilateral agreements and regulations that improve legal migration paths and safeguard migrants' rights must be strengthened.

2.8 Why Remittance inflows growing in Developing Countries

Remittances to underdeveloped nations have increased dramatically in recent years. The current rise in remittance transfers is attributed to a number of factors. The most evident aspect is the consistent increase in migration to developed countries, which is caused by economic, technological, social, and policy-related issues (Martin & Widgren, 2002).

Additionally, improved data collection, an increase in the number of migrants and their income, reduced costs and expanded networks in the remittance industry, and government policies that enhance banking access and money transfer technology all encourage transfers through official

channels (World Bank, 2005). Some of the factors that contribute to the increasing remittance flow in emerging nations include the following.

a) Growing migration and labour mobility to the global North

One of the primary causes is the rising number of migrants looking for work in high-income nations, which is fueled by wage inequality, violence, and climatic crises. According to World Bank predictions, there will be more than 281 million foreign migrants in 2020, many of whom will come from developing nations (World Bank, 2020). Many people from developing countries migrate to countries with greater economic possibilities, according to the International Fund for Agricultural Development (IFAD) (2024). Supporting their relatives back home is their main driving force, which results in large remittance flows. US\$656 billion was sent to low- and middle-income nations in 2023 (IFAD, 2024).

Remittance growth in emerging nations can also be attributed to resilient host economies. For example, migrant earnings were supported by robust labor markets in host countries (such as the United States and GCC countries) during the post-pandemic rebound. According to the World Bank (2023), low unemployment in host countries contributed to the \$647 billion in remittances to Low and Middle Income countries (LMICs) in 2022.

b) Policy Reforms

Many nations have put in place measures to ease remittance flows, including tax breaks and diaspora bonds, anti-money laundering (AML) reforms, lower transaction costs, and advantageous exchange rate mechanisms. Countries such as Ethiopia and India use investment schemes or tax breaks to encourage remittances (Ratha, 2011).

Additionally, investment opportunities and diaspora bonds improve the flow of remittances. Some countries are looking into financial products like diaspora bonds in an effort to draw in foreign investments from their citizens and increase remittance inflows. A diaspora bond, for example, raised \$300 million in 2017 and Nigeria is thinking of issuing one in the US to boost remittance inflows (Ratha, 2011; Oyeboode, 2024).

The flow of remittances to developing countries has increased as a result of improved regulatory frameworks that promoted official transfers over Hawala, or informal channels. According to Kapur (2003), the black market premium for foreign exchange has significantly decreased as a result of changes in the economic policies of many developing nations, particularly with regard to foreign exchange regulations. Consequently, a portion of the rise in officially reported remittances can be attributed to a move from informal to formal channels.

c) Development of Financial Infrastructure and Technological Advancements

The growth of infrastructure has made cross-border money transfers easier. Money-transfer providers such as Western Union controlled the remittance industry for a long time. The corporation carried out about \$700 billion in transfers and payments globally in 2002 alone, with 68 million transactions between customers (and an additional 173 million between customers and businesses). Of its 24,000 agents globally in 1994, two-thirds were located in North America. These numbers had nearly tripled by the middle of 2003 (to 165,000), with 70% of them being from outside the US (Kapur, 2003).

The emergence of digital financial services has recently reduced the prices of money transfers and made it simpler and more affordable for migrants to send money home, which has increased remittance volumes. Transaction costs were reduced by digital financial services like Telebirr in Ethiopia and Mobile Money (also known as M-Pesa in Kenya and Ethiopia). The growing usage of decentralized platforms for quicker, less expensive cross-border payments is strengthened by the block chain and crypto currency. According to the World Bank (2021), average remittance prices decreased to 6.3% in 2021, improving accessibility in this regard.

d) Social and Demographic Shifts

The remittance flow in developing countries is boosted by the growing feminization of migration, or the increased participation of women in international movement, which is fueled by structural injustices, labor market needs, gendered socio-economic pressures, and political reasons. Women currently make up about half of all foreign migrants in developing nations, and they frequently work in unofficial occupations like childcare, housework, and hospitality. As a result of this development, remittance flows have changed, and women migrants are now major contributors to household incomes and national economies (UN Women, 2020).

Different regions have different patterns of female migration in emerging nations. For example, women from South Asia, including Bangladesh, Nepal, and Sri Lanka, migrate to countries in the Gulf Cooperation Council (GCC); women from Sub-Saharan Africa, including Ethiopia, Nigeria, and Kenya, are the main migrants within Africa and the Middle East; and women from Latin America, including Dominicans and Guatemalans, migrate to the United States and Spain (World Bank, 2022; IOM, 2023; Orozco, 2020).

According to the United Nations (2020), 48% of women migrants worldwide frequently send money back home. For instance, 25–30% of GDP in Nepal and the Philippines comes from remittances (UNDP, 2021). In Ethiopia, this pattern is evident, as women make up a sizable share of foreign migrants, especially in the Middle Eastern domestic labor market. Remittance flows and Ethiopia's socioeconomic dynamics will be significantly impacted by this change. More than 70% of

Ethiopia's labor migrants to the Middle East are women, and remittances account for 5% of Ethiopia's GDP (IOM, 2022; World Bank, 2023).

e) Countercyclical Nature of Remittances

Migrants' remittances to their home countries frequently show a countercyclical trend, which means that they grow in response to crises, natural catastrophes, and economic downturns in the receiving nation. Households and economies are stabilized by this behavior, which serves as a financial "safety net." Accordingly, remittances, as opposed to erratic foreign direct investment (FDI), are resilient in times of crisis (Ratha et al., 2011). The decline in inflows during the 2008 recession was only 5%. When other financial flows may decrease, remittances offer a steady source of income. They frequently rise during recessions or following natural disasters in the countries of origin of migrants (Ratha, 2012). Additionally, Fajnzylber and López (2007) reported that while hyperinflation reduced local revenues, remittances surged during Argentina's 2001 debt crisis. Inflows from the diaspora became essential for food and medication in Zimbabwe (Hyperinflation, 2008) (Chikanda, 2011).

Moreover, other studies demonstrated that in certain developing country regions, remittance flows rose throughout various crises. For example, remittances from Bangladesh increased by 18% in 2020 during the COVID-19 Pandemic (2020–2021) as migrants sent savings home during lockdowns; Nepal saw a 10% increase in 2020 to offset losses in tourism revenue; and remittances to El Salvador and Guatemala increased by 7–12% in 2020 to support workers in the informal sector in Latin America (World Bank, 2021; Nepal Rastra Bank, 2021; Orozco, 2021). Remittances in the Philippines increased by USD 600 million following Typhoon Haiyan (2013) (UNDP, 2014). Remittances increased by 27% in Nepal, helping to finance rehabilitation efforts after the 2015 earthquake (Asian Development Bank, 2016).

All things considered, these elements work together to support the increasing remittance inflows to developing nations, which are essential to their attempts to reduce poverty and advance economically. Additionally, a complex interaction between migration dynamics, technological innovation, and adaptable policy is shown in the increase of remittances. For poor countries, these inflows are a vital source of economic stability, highlighting the necessity of inclusive policies and ongoing investments in digital infrastructure. In order to do this, the synthesis emphasizes how gender, migration, and remittances interact in developing nations and stresses the necessity of gender-sensitive policies to optimize gains while reducing dangers.

The feminization of migration in developing nations is a reflection of vulnerability as well as empowerment. Women's remittances support homes and boost local economies, but their potential is undercut by systemic exploitation and legislative deficiencies. To optimize benefits for women and

their communities, it is imperative to enhance gender-sensitive migration governance, increase social protections, and use digital financing.

In developing nations, remittances are an essential countercyclical lifeline that reduces poverty and stabilizes economies in times of emergency. However, the economic ties, transfer systems, and supportive policies between the migrant and host countries are what make them effective. To optimize this resilience tool, governments and institutions must give cost reduction and financial inclusion top priority.

2.9 Determinants of Remittance: An overview

In general, a number of factors that fall under the categories of individual, household, and macroeconomic drivers affect remittances, or the money that migrants send home.

2.9.1 Individual Determinants

Pure Altruism

A sense of responsibility and concern often motivates migrants to send money home to help their families. The quantity and regularity of remittances can be strongly impacted by the quality of family ties and the demands of family members back home. The concept of pure altruism as a factor in remittances is based on the notion that migrants send money home without anticipating anything in return because they really want to improve the lives of their relatives or communities. Self-interested goals like investment, inheritance hopes, or social prestige stand in contrast to this. Empathy and a sense of duty are its foundations, and they are frequently fueled by the needs or financial struggles of those left behind. Accordingly, Lucas and Stark (1985) found that migrants return a portion of their earnings back to their home nations in order to improve family members' well-being by giving them extra money.

Pure Self-Interest

Beyond selflessness, migrants may send money to retain economic relationships or invest in assets or companies back home in the hopes of reaping future rewards. The migrant may be sending money home to invest in local assets and make sure they are maintained with care. B. de la Baière et al. (2002) pointed out that the two main reasons why migrants send money home are to invest in local assets and to receive a share of the family's inheritance. Families carefully choose and buy assets in their home area, and even families are trustworthy when it comes to keeping the assets, which is why migrants prefer to invest there. This suggests that the inheritance will be larger the larger the remittance.

Additionally, Lucas and Stark (1985) claimed that pure self-interest motives have the intention of returning home, which may be enough to encourage remittances for investments in public

assets to boost political influence or prestige, in fixed capital like land, livestock, or a house, and in what could be called social assets—the relationships with family and friends. Remittances from migrants, for instance, could be seen as repayments of loans taken out to fund the migrant's expenditures throughout the migration process or their investments in human capital (Rapoport & Docquier, 2005).

Income Level

Increased income allows migrants to send more money home. On the other hand, a migrant's ability to send money home may be hampered by economic downturns or job uncertainty in the host nation. One of the main factors affecting remittance amounts is the income a migrant makes in the host nation. In general, migrants are able to send more money home when their earnings are higher. However, the remittance capacity is frequently determined by the disposable income, or what is left over after living expenditures are paid. Larger payments are more likely to be sent by migrants who have more money to spare (World Bank, 2023).

Education and Occupation

Remittance behavior is influenced by a migrant's earning potential and financial literacy, which are influenced by their occupation and degree of education. While improved financial literacy may lead to more strategic remittance decisions, such as investing rather than just supporting consumption, higher education frequently results in better-paying positions (Adams & Page, 2005). This suggests that remittance patterns are influenced by occupation and education, especially for skilled migrants.

Duration of Stay in the Host Country

Remittance trends are influenced by the duration of a migrant's stay in the host nation. While individuals who have stayed longer may contribute less as their ties to the home country wane or they get more integrated into the host society, younger migrants frequently send more to support their families or pay back migration loans (Carling, 2018).

2.9.2 Household Determinants

Household Composition

The frequency and magnitude of remittances can be influenced by the number and kind of dependents—such as children, elderly family members, or people with disabilities—in a household in the home country. In order to cover expenses like healthcare and education, households with more dependents usually receive larger or more frequent transfers (Bollard et al., 2011). According to the Pew Research Center (2019), remittance behavior is greatly influenced by the requirements and makeup of a migrant's family back home. In order to pay for necessities like food, healthcare, and education, migrants with larger families, small children, or elderly parents typically send more

money. Personal financial objectives are frequently subordinated to family responsibilities. This demonstrates how remittance behavior is influenced by household makeup.

Additionally, research indicates that remittances are typically larger for households with more dependents or females (Simpson & Sparber, 2019). Gender disparities in work prospects and family responsibilities can influence remittance behavior. According to Orozco (2017), male migrants may concentrate on making larger, less frequent transfers for financial goals, whereas female migrants may send a higher portion of their income to assist dependents like children or elderly relatives.

Economic Status

Family members of migrants are more inclined to assist households with low incomes or those experiencing financial difficulties. In this sense, Acosta et al. (2008) asserted that a household's financial status has a major impact on remittance behavior. Remittances are frequently used as a safety net against income shocks by lower-income households to pay for necessities like food, medical care, and education. On the other hand, wealthier households might use remittances for investments or savings.

Migrant's relationship with the Household

Whether a migrant is a spouse, kid, or sibling, their family roles and links influence the reason and volume of remittances they send home. A child may prioritize helping parents, whereas a spouse may send money for household maintenance, indicating responsibilities related to familial ties (Lucas & Stark 1985).

Access to Financial Services

Larger and more regular remittances are more likely to reach households with access to banks or mobile money services because of the reduced transaction costs and improved dependability. Informal routes may result in smaller or less reliable transfers due to limited access (Seshan & Yang, 2014). This illustrates how migrant workers' remittance patterns are influenced by their financial availability when sending money back home.

Cultural and Social Norms

One reason for remittance is social norms and remittance behavior: In Vietnam, an empirical study by Niimi and Ozden (2008) discovered that cultural norms and community expectations frequently determine remittance behavior. In societies where providing for family members is a strong tradition, migrants are under pressure to send money home, which results in higher remittance flows motivated by a sense of obligation. This demonstrates how migrant workers' decisions to remit money are influenced by social norms in their home country.

Household Location (Urban vs Rural)

The geographic location of a household may have an impact on migrants' propensity to send money home. According to Mendola's (2008) empirical research from Bangladesh, remittance behavior varies across urban and rural areas. Rural households, which have less local economic prospects, tend to rely more on these remittances, whereas urban households may have a wider range of revenue sources. This suggests that remittance dependency in the home area is influenced by location.

2.9.3 Macroeconomic Determinants

Economic Conditions in the Home Country

The state of the economy in the migrants' home nations also matters. Economic downturns, natural disasters, or political unrest in the home nation may cause migrants to send more money to help their families; this is referred to as "altruistic remittance." On the other hand, if the domestic economy improves, remittance might decline as the need lessens (Yang, 2011). Additionally, Fullenkamp et al. (2008) noted that remittances frequently act as a safety net in the event of natural disasters, political unrest, or economic downturns in the home nation. Remittances from migrants may rise in these circumstances in order to support their families.

Income Levels in Host Countries

Remittance flows are strongly impacted by the economic climate and employment prospects in the nation where migrants are employed. The ability of migrants to send money home increases with higher wages and employment opportunities. For example, remittance flows tend to increase during economic booms in host countries, while they may decrease during recessions (Adams & Page, 2005).

Exchange and Inflation Rates

Higher remittances may result from favorable exchange rates, as migrants benefit from the higher worth of their sent money in their native currency. High domestic inflation can reduce remittances' purchasing power, which may lead migrants to send more money to make up for the value loss. According to Higgins et al. (2004), remittance volumes are influenced by the exchange rate between the currencies of the home and host countries. A decline in the value of the home country's currency in relation to the host country's currency can encourage migrants to send more money because it gives recipients more purchasing power.

Migration Patterns and Stock of Migrants

Remittance flows are determined by the quantity of migrants and the length of time they spend in the host nation. Ratha and Shaw (2007) stated that although the amount per migrant may decrease over

time as ties to the home country deteriorate, greater migrant populations often result in higher aggregate remittances.

Cost of Sending Remittances

The amount and frequency of migrant remittances are influenced by transaction expenses, such as fees levied by banks or money transfer companies. While high fees can discourage sending smaller amounts, lower prices encourage larger and more frequent transfers (Freund & Spatafora, 2008).

Interest Rate Differentials

Interest rate differentials between the home and host nations may have an impact on remittances, especially for flows that are driven by investments. According to El-Sakka & McNabb (1999), migrants may send more money for savings or investments rather than consumption if the home nation gives higher returns on those assets.

Global Economic Shocks

Events such as pandemics, changes in the price of oil, or financial crises can cause remittance flows to be disrupted. The global financial crisis of 2008, for instance, caused migrant workers to lose their jobs, which decreased remittances to certain areas. Meanwhile, oil-rich nations experienced changes linked to energy costs (World Bank, 2020).

We may finally draw the conclusion that remittance behavior is shaped by a combination of individual, household, and macroeconomic variables of remittances, which affect the amount and motivation of money sent home by migrants. We may conclude from an economic standpoint that the migrant's income level is a significant factor. Larger remittances are usually the result of migrants earning more money in the host nation because they have more money to send home. Both the home and host nations' economic situations are important because while robust job markets outside promote migration and remittance flows, poverty or unemployment at home heightens the demand for financial assistance. Transaction costs and currency rates also play a role; although excessive fees may deter people from sending money, a good exchange rate can increase the value of remittances. From a sociological standpoint, community expectations and familial ties are major motivators. It is common for migrants to feel obligated to provide for their departed parents, spouses, or children. Cultural conventions can make this worse, such as the idea that healthcare or education should be paid for. It can also be influenced by the size of the migrant's network in the host nation; a close-knit diaspora may pool resources or promote regular sending. Therefore, it is essential for policymakers to comprehend these factors in order to establish conditions that support remittance flows, which are vital to the economy of many developing nations.

2.10 Channels of Remittance

Remittances might flow through formal or informal channels, which are distinguished by their accessibility, structure, and regulations. While unregulated, frequently community-based or personal means are used in informal channels, formal channels involve regulated organizations such as banks, money transfer operators (MTOs), and postal services. The migrant's situation, trust, cost, and convenience are the main factors that influence their decision.

. According to Baruah (2006), the official Channels include international money transfer operators (MTOs) like Western Union and Money Gram, as well as smaller MTOs that cater to particular geographic markets like Dahabshil for Somalia, and both national and international banks. The informal channels, on the other hand, are unregistered MTOs like traders, bus drivers, friends, family, and Hawala dealers. Many unregistered actors, who typically offer a service at a lesser cost than the well-known MTOs, benefit from the ease of the money transfer operation.

Furthermore, formal remittance channels are clear, controlled, and frequently involve financial institutions or authorized money transfer operators (Ratha, 2003). These channels usually adhere to legal and regulatory frameworks and may be traced. Bank transfers and money transfer operators (MTOs), which enable cross-border transfers through businesses like Western Union, MoneyGram, or Wise, are included users can send and receive money via mobile devices through mobile money services like M-Pesa in Kenya and Ethiopia, and Telebirr in Ethiopia. Postal services: Additionally, he found that these channels are more dependable and safe, and that they are frequently quicker and more effective for big volumes.

Informal remittance channels function outside of established banking systems and are frequently employed to evade taxes, fees, and regulatory scrutiny. These techniques lack transparency and may be more dangerous due to their lack of legal protection, possibility for fraud or theft, and connections to illegal acts like money laundering or financing terrorism. Conversely, there are some advantages, including reduced transaction costs in comparison to official channels, accessibility in areas with inadequate banking infrastructure, and anonymity for both senders and recipients (El Qorchi et al., 2003).

Some of the unofficial remittance transfer systems that El Qorchi et al. (2003) discovered are listed below.

Hawala method: This trust-based method is widely used in the Middle East and South Asia. It is a conventional method that transfers funds without the actual movement of currency via a network of brokers known as hawaladars. It is unregulated yet quick and inexpensive. The Middle East and South Asia are major locations for this channel. A hawaladar in Dubai, for instance, would receive

cash from a worker there and then direct counterparty in Pakistan to send the same amount to the recipient. Africa.

Cash Carrying: People physically transport cash across international borders, frequently in order to avoid transaction fees.

Gift Remittances: Sending money back home through friends or relatives.

Informal Couriers: Sending money using unregistered people or services.

For many developing nations, remittances are a vital source of revenue that greatly aids in financial stability, economic progress, and the fight against poverty. Local conditions, infrastructure, and migrant preferences all influence the formal and informal channels via which remittances travel in developing nations, each having unique benefits and drawbacks.

Russell (1992) asserts that the decision to send money through formal or informal channels is influenced by a number of factors, including the socioeconomic status of the recipient and household members, the volume and nature of economic activity in the host nation, the exchange rate, the cost of remittances, and the relative effectiveness of formal versus informal channels. Remittance inflows into unofficial channels may be greatly influenced by the existence and significance of a parallel currency rate market. There exists a parallel currency rate market in Ethiopia that offers a substantial premium, which may encourage migrants to move from official to unofficial channels.

It is inherently challenging to estimate informal remittances sent through informal routes. Yet, when it comes to remitting money, informal channels outnumber formal ones in the majority of developing nations (Baruah, 2006). Despite the expansion of formal transfer mechanisms, significant volumes of remittances still pass through unofficial (and occasionally covert) channels in developing nations, where they are not subject to government oversight or regulation, according to Kapur (2003). Especially in Asia, these transfer systems have existed for centuries. Hawala and Hundi (South Asia), Fei Ch'ien (China), Phoe Kuan (Thailand), Hui (Vietnam), and Casa de Cambio (South America) are a few examples (Kapur, 2003).

Table 2.2. Channels of remittance in some selected developing countries

No.	Countries	Channels	
		Formal	Informal
1	Afghanistan	Money transfer companies (Western Union), Swift	Hawala System
2	Bangladesh	Banks, Post Office	Hundi
3	Benin	Post Office, societies, banks	Personal, informal transfer societies
4	Burundi	Money transfer companies (Money Gram, La Mutec and Western Union)	
5	Cambodia	Banks	Tourists/visitors, informal remittance companies
6	Ethiopia	Banks, money transfer companies (Western Union, Money Gram)	Hawala, informal urban transfer systems, cash transfers through individuals travelling to Ethiopia
7	Haiti	MTOs (Western Union)	Personal contacts and third parties
8	Lesotho	Banks, recruitment agencies	
9	Mali	Banks, MTOs (Western Union), Fren banks	Fax system operated by local merchants and businesses both in Mali and in migrant host countries, hand carried
10	Tanzania	Banks, money transfer companies (Western Union, Money Gram)	Friends and relatives travelling abroad
11	Uganda	MTOs (Money gram and Western Union), banking institutions,	Trading companies and personal acquaintances

(Source: Baruah, 2006, P.17)

Due to the significance of informal remittance networks and the absence of remittance data collection, under-reporting is especially prevalent in Least Developing Countries (LDCs). According to a survey conducted by Maimbo (2003) found that 85 percent of all remittances in Sudan were reported to be informal. **Table 2.2** displays the remittance channels in developing nations based on a survey study by Baruah (2006).

Table 2.2 shows that migrants sent money home through both official and informal methods. Of the 11 developing nations studied, three (Afghanistan, Bangladesh, and Cambodia) are in Asia,

one (Haiti) is in the Caribbean, and seven (Benin, Burundi, Ethiopia, Lesotho, Mali, Tanzania, and Uganda) are in Africa. According to the table, banks were more significant in Asia (Bangladesh and Cambodia), but global MTOs were seen as the primary means of money transfer in the majority of African nations and Haiti.

In certain African nations, banks were also operational. With the exception of Burundi and Lesotho, nine countries reported using informal procedures. Although there is regional heterogeneity, this suggests that informal remittance channels predominate over official ones, with lower informal usage in the Caribbean and higher informal usage in South Asia and Sub-Saharan Africa.

2.11. Drivers of the usage of Informal Channels in Developing Countries

In order to send money back to their home countries, migrants employ unregulated but crucial informal remittance routes. In developing nations like Ethiopia, these mechanisms are common and frequently function outside of formal financial institutions. They are motivated by cost-effectiveness, cultural trust, and accessibility a combination of structural, economic, social, and pragmatic factors that make formal systems less desirable or accessible. These factors which are all exacerbated in low-income environments combine to form a weak financial infrastructure, high expenses, mistrust of institutions, and cultural preferences.

Weak Financial Infrastructure

Many developing nations have poor banking penetration rates, particularly in rural areas where the majority of remittance beneficiaries reside. In keeping with this, Singh et al. (2011) claimed that rural areas' inadequate banking infrastructure encourages reliance on unofficial networks. One example of this is Ethiopia, where, according to World Bank data, just 46% of individuals had a financial account in 2021 and there are few bank offices outside of major cities like Addis Ababa. Formal channels, such as banks or MTOs, require physical locations or digital access; however, this is hampered by inadequate roads, unstable electricity, and a limited internet (Ethiopia had a 25% internet penetration rate in 2023) (Freund & Spatafora, 2018). According to their analysis, informal flows outweigh formal financial access in these areas, accounting for between 50 and 75 percent of all remittances.

High Costs of Formal Channels

Formal transfers typically reduce the little amounts that migrants send because of high costs and poor exchange rates. A USD200 Western Union transfer from the United States to Ethiopia could cost USD10–15 (5-7.5%), plus currency rate losses because of a restricted birr. These expenses are completely avoided by informal solutions like hand delivery or Hawala (Kakhkharov and Rohde's, 2020). Formal channels charge 8–12%, whereas informal channels charge 2-5%. They discovered

that these fee differences drive migrants to unregulated networks. For Ethiopian migrants in the Gulf or Saudi Arabia, where incomes are low, cutting expenses is essential.

Cultural and Social Ties

Informal channels rely on personal connections and trust, which are appealing in collectivist cultures. In keeping with this, Maimbo (2003) claimed that Hawala overcomes bureaucratic obstacles and thrives on ethnic or familial ties. In Ethiopia, migrants frequently transfer funds via friends, family, or ethnic networks that have close ties workers in Dubai gives money to a returning trader. Using agents connected to clans or kinship groups, Hawala, which is popular in the Horn of Africa, thrives on this trust (Orozco and Ellis, 2016). They also point out that, particularly in close-knit diaspora communities overseas (such as Ethiopian enclaves in Washington, D.C.), cultural familiarity with informal systems outweighs the perceived risks.

Accessibility and Flexibility

For illegal migrants or recipients in rural areas, informal techniques may not require identification, accounts, or literacy limitations. Given this, Ratha (2003) said that migrants might evade taxes or documentation requirements, which is regarded as regulatory avoidance. An Ethiopian maid in Lebanon, who frequently lacks documentation, can transfer money to a courier but cannot readily use a bank. Although there may not be an MTO agent close by, recipients in isolated Amhara or Sidama regions can still pick up from a local dealer. Furthermore, Hawala networks kept money moving while banks paused during Ethiopia's 2021 currency shortages, demonstrating how informal channels may adapt to crises (Maimbo and Passas, 2004). They contend that Hawala is a lifeline in weak nations like Ethiopia because of its adaptability.

Table 2.3. Comparison of official and unofficial channels of remittance in developing countries

Aspect	Official Channels	Unofficial Channels
Regulation	Regulated and transparent	Uncontrolled and unclear
Cost	High fees and exchange rate margins	minimal or no existence fees
Speed	Fast, especially with digital platforms	Very fast, often within hours
Accessibility	Restricted in rural and remote areas	Widely available, even in remote areas
Security	High security with legal safeguards	Low, no legal options
Transparency	Traceable and compliant with Anti-Money Laundry (AML) / laws	Monitoring is challenging

(Sources: Own development by compiling the literature parts, 2022)

Table 2.3 shows that in developing nations, official and informal remittance channels play complementary roles. Whereas informal channels are frequently used in areas with limited access to formal financial systems or because they are more affordable, accessible, and cost-effective, official channels are preferred for their security, transparency, and compliance. Although both contribute significantly to international remittance flows, regulatory oversight is difficult in the case of informal channels.

2.12. Impacts of Informal Remittance Channels in Developing Countries

In developing nations, informal remittance routes provide both advantages (accessibility and affordability to support families) and disadvantages (presenting dangers to legal security, financial inclusion, and economic planning). The balance of these effects emphasizes the necessity of formalizing these flows through policies that use digital solutions to reduce risks and increase economic gains, as demonstrated by current trends and policy suggestions. Their main effects and suggested policies are summarized below.

Positive Economic and Social Impacts

From an economic perspective, various studies show that informal remittance channels are essential for helping families and communities in developing nations, especially in places where access to official financial services is restricted. Accordingly, Carling (2014) and Singh et al. (2011) discovered that informal remittances directly support household consumption, healthcare, and education, especially in rural areas where formal banking access is limited. Additionally, the funds are frequently reinvested in agriculture or small businesses, which promote local entrepreneurship as an economic stimulus. Frequently with cheaper transaction fees (as low as 2–5% compared to 13% for formal channels), they give migrants a chance to send money home when formal routes are

unavailable or too costly. Because of its affordability, more money will reach the recipients, promoting investment and consumption and assisting in the fight against poverty. An analysis of Nigeria, for example, indicates that informal remittances—which account for an estimated 50% of total flows—are essential to household income, particularly in rural regions (Carling, 2014; Singh et al., 2011).

Socially, informal channels help to stabilize household incomes by providing financial support, especially in low-income countries where remittances account for about 6% of GDP, while in middle-income nations they only make up 2% (Uddin et al., 2022). As seen during the COVID-19 pandemic, when remittances helped stabilize consumption as other revenue streams, such as tourism, declined, this support is essential for reducing economic shocks (World Bank, 2023). Furthermore, according to Pieke et al. (2004) and Carling (2014), informal systems are based on networks of kinship and trust, which build social cohesion in links within the community and improve gender dynamics by making women the major recipients and increasing their financial agency.

Negative Economic Impacts

Planning and policymaking are severely hampered by the use of unofficial channels. These movements affect foreign exchange reserves, sovereign credit ratings, and monetary policy choices because they are not included in official statistics, which compromises macroeconomic data. In this context, Fernandes et al. (2022) point out that between 35 and 75 percent of recorded flows in developing nations are unaccounted for, which restricts the capacity of those nations' central banks to direct capital into profitable industries like real estate, business development, and investment. In addition to making fiscal policy more difficult, the government's inability to monitor these inflows may result in lower tax income.

Legal and Security Risks

There are serious legal and security hazards connected to informal remittance networks, including the possibility of illicit activity. According to an international remittance assessment, there is a risk to financial stability because these channels may be exploited for terrorist financing or money laundering. IOM (2024) asserts that existing anti-money laundering laws, particularly those enforced by the Financial Action Task Force (FATF), are frequently ineffectual in poor nations and have little effect in nations like Afghanistan and the United Arab Emirates. Financial crimes are more likely as a result, and they have the potential to cause social and economic instability.

Furthermore, El Qorchi et al. (2003), Maimbo (2003), and IOM (2024) pointed out that informal channels, like hawala, are susceptible to being abused for illegal purposes because there is little oversight, such as money laundering and fraud: Concerns regarding money being transferred to

extremist organizations in the financing of terrorism are raised by a lack of transparency, and the risk of fraud or loss for senders and recipients is increased by the lack of official protections in informal channels. There is no legal recourse in the absence of formal contracts, which can result in large financial losses, especially for vulnerable populations that depend on these transfers.

Impact on Financial Inclusion and Exchange Rate Distortions

Financial exclusion results from informal flows that avoid formal financial system, restricting access to credit, savings, and overall economic growth (Freund & Spatafora, 2018). Additionally, unreported inflows can cause local currencies to depreciate and make macroeconomic planning more difficult, which are known as exchange rate distortion (El Qorchi et al., 2003).

Fernandes et al. (2022) also pointed out that persons who frequently use informal channels are more likely to remain outside of the official financial system, which limits their capacity to borrow and save through official institutions. Long-term economic development is hampered by this exclusion, which restricts access to credit and savings products in Sub-Saharan Africa, where informal channels are common due to a lack of suitable financial infrastructure.

Policy Implication

Although informal remittance routes offer vital lifelines to underprivileged groups, they also present systemic hazards. It is essential for policymakers to comprehend these channels if they want to improve financial inclusion while reducing risks. The developmental benefit of remittances must be maximized, and policymakers must balance financial inclusion with regulatory protections to fully realize the developmental potential of both systems. In this context, Ratha (2003) pointed out that leveraging digital and mobile solutions, as well as lowering transaction costs and raising financial literacy can encourage migrants to use regulated channels and improve economic integration by reducing risks.

Furthermore, it is crucial to incorporate informal brokers into oversight systems because balanced regulation in the form of excessively severe laws may push remittances deeper underground (Maimbo, 2003). Generally speaking, decreasing transaction costs, developing legal frameworks, and growing financial infrastructure will promote the formalization of informal networks without diminishing their advantages. 2.13. Migration, Remittance and Horizontal spatial growth

2.13 Migration, Remittance and Horizontal Spatial Growth

2.13.1 Migration and Remittance Overview

Throughout human history and across all countries, migration has been a global phenomenon (Bariagaber, 2014). Migration is said to frequently be a reaction to the political, social, and economic issues that people face in their daily lives (Solimano, 2010). Migration affects the home, the sending

society, and ultimately the entire economy (Azam & Gubert 2006). It might be a family decision or an individual one (Bariagaber, 2014; Uchehara, 2016). According to de Haas (2003), migration is typically a very effective strategy for significantly raising a household's standard of living and financial standing.

Migration is one of the numerous livelihood choices that households utilize to diversify their sources of income. Migrants' remittances are crucial in raising households' standards of living and lowering their degree of vulnerability (Ashenafi & Haile, 2016). These payments are referred to as workers' or migrants' remittances when migrants return home a portion of their earnings in the form of cash or products to support their families. In many developing nations, they now account for the greatest source of foreign money because to their tremendous growth in recent years (Ratha, 2005).

Remittances have the ability to support local, regional, and national economic development in the nations that send migrants and this is becoming increasingly recognized. The most direct connection between migration and development is through remittances, which are a result of migration (Baruah, 2006). Asmellash (2006) asserts that both the nations of origin and the countries of destination are increasingly realizing the development possibilities of migration.

Accordingly, Haas (2007) pointed out that although migration has negative effects in the countries of origin (such as a decrease in the labor supply, a preponderance of non-productive use of remittances, the development of remittance dependency, and the "brain drain"), there may be a "brain gain" and remittances are now thought to have positive short- and long-term effects because they may help reduce poverty and enable household investments in human and physical capital.

Migration frequently results in resource flows from migrants back to their home homes. Families of origin may find that migrant remittances are a useful source of income and a way to diversify their risks. Remittances have the power to drastically raise household savings, make purchases easier, and change the distribution of income in the community (Osaki, 2003).

Remittances are a resource that low-income individuals directly manage and effectively use to achieve development objectives including better housing, education, and nutrition. In certain instances, remittances help impoverished families build assets, diversify their risks, and become more productive and employed (Jennings and Clarke, 2005).

One of the most widely used metrics to gauge how closely an out-migrant is tied to their home country is remittance. One way that migrants mainly provide financial support to those they have left behind is through remittances (Binford, 2003). One domestic strategy to boost the family's sources of income and create additional funds for recurring needs is the remittances (Binford, 2003; Bekele, 2013). The earliest theoretical group to study migration, known as the "migration optimists,"

maintained that remittances and movement were essential to assisting children and families who were left behind in meeting their fundamental needs. The 'migration optimists' asserted that migrants act as intermediaries for the families left behind in the sending community (De Haas, 2007b).

Remittances from internal migration made up 10% of Moroccan households' income (De Haas, 2006); 18% in Ecuador and 43% in Brazil (Bendixen & Onge, 2005); half of Bangladeshi and Nepalese households' total income (Seddon, 2004); and 50% of household expenses (Nwajiuba 2005). Remittances have the potential to increase socioeconomic inequality in the sending cultures, which could lead to a high rate of migration-induced migration, according to migration pessimists.

In migrant-sending areas, the most obvious and quantifiable advantages of international migration are migrant savings and remittances. They are shown to make a direct and indirect contribution to the income of remittance-receiving households, and this contribution could be significant. In migrant-sending regions, economic ties spread the benefits of savings and remittances to other households, including those that might not be directly involved in international movement (Taylor, 2004). By increasing income, migration and remittances can benefit the welfare of household members left behind, which in turn may spur increased investment and consumption (Haile & Fitchfield, 2019).

In developing nations like Ethiopia, international migration has emerged as a means for individuals and/or families to deal with economic hardship and poverty. In addition to trying to better their own lives, migrants also try to remit a sizeable portion of their earnings to their relatives back home. Both the rapid growth in international remittances and the abundance of money transfer organizations demonstrate the significance of international migration. The intricate web of cultural, economic, social, and political ties that migrants maintain with their home countries can be maintained by new technology and more affordable travel (World Migration Fact book, 2011a cited in Tenaye, 2019).

Migration can have significantly more beneficial developmental effects than previously thought, according to a growing body of more recent empirical research. In addition to the fact that migrant households are more likely than non-migrant households to invest, a number of studies have demonstrated that consumption and the often trivialized "non-productive" investments in housing, small businesses, and education can have positive income multiplier effects, which may indirectly benefit non-migrant households as well (De Haas, 2006).

2.13.2 Remittance and Horizontal Spatial Growth

In developing nations, the relationship between remittances (money sent by migrants to their home countries) and horizontal spatial growth (outward urban expansion, peri-urban sprawl, or land-use changes at the periphery of cities) is a crucial area of research these days. In developing nations, horizontal spatial growth frequently takes the form of unplanned urban sprawl, suburbanization, or informal settlements, which are often fueled by investments in housing and infrastructure.

Remittances and Peri-Urban Housing Expansion

Horizontal urban expansion is a common result of remittances funding the development of homes in peri-urban areas, where land is less expensive. Even if they are left empty, migrant households view home construction as a long-term investment. According to Cohen (2005), peri-urbanization was fueled by remittance flows in Guatemala, which financed the development of homes on the fringes of cities. Additionally, according to Admassie (2018), remittances in Ethiopia fund homes in secondary cities like Hawassa and peri-urban areas of Addis Ababa, causing unplanned sprawl and enlarging the city's perimeter into formerly agricultural land.

Furthermore, studies show that remittances supply the funding needed to support urban growth and real estate development. Remittances are frequently used by families for housing-related expenses, such as buying land, constructing homes, or making real estate investments. Due to this demand, new housing developments are built, often extending the limits of metropolitan areas and promoting horizontal spatial growth. For example, remittances, which account for 10% of GDP, have maintained demand for real estate in the Philippines, especially in the residential market (Philippine Real Estate News Curator, 2024).

Osili (2004) asserts that a rise in remittances raises household income, which raises housing demand. In response, developers build new housing estates or subdivisions, frequently on the fringes of urban centers, which causes urban areas to physically grow. In nations like Nigeria, where an estimated 50% of remittances go through unofficial routes to support home real estate investments, this process is clearly visible.

Regional differences exist in the effect of remittances on horizontal spatial growth in developing nations. For instance, remittances promote both rural and urban development in Sub-Saharan Africa, where they are expected to have grown by 5.3% in 2022. This could help spatial growth more equitably. In contrast, remittance-driven real estate may lead to concentrated urban expansion in South Asian nations like Bangladesh, which have 30% informal flows (Malpass, 2022).

Land Acquisition and Fragmentation

Migrant households frequently buy land using remittances for housing, farming, or speculation. In areas that send migrants, this may result in concentrated land ownership. Households can buy land in peri-urban areas thanks to remittances, which splits up agricultural land and transforms rural areas into urban-rural hybrids. According to Zoomers (2010), remittances in Latin America and Africa are a major factor in land acquisitions, which frequently result in the displacement of smallholders and the fragmentation of rural landscapes. Additionally, they encourage speculative land purchases, which accelerate horizontal growth. Teferi and Newman (2017) also claimed that remittances in Ethiopia encourage migrants to speculate on land markets and purchase land parcels for potential development or sale.

Land purchases financed by remittances have the potential to divide agricultural land into smaller parcels, decreasing productivity and changing the property's use from subsistence farming to commercial or residential uses. In line with this, Adhikari and Hobley (2015) stated that in rural Nepal, land fragmentation is caused by remittances, as households sell partitioned plots to pay for urban housing or migration. To this end, remittances in Nepal decrease the extent of agricultural landholdings, endangering food security.

Remittances support the transition from subsistence farming to residential or commercial land usage particularly in the vicinity of urban areas. As a result, horizontal urbanization is accelerated and rural landscapes are altered. According to Gray and Bilsborrow (2014), migrant households in Ecuador are driven to fragment their land and divide plots for housing or sale by remittances. Additionally, Tacoli et al. (2015) found that remittances encourage households to turn agricultural property into residential or commercial buildings, particularly in the vicinity of urban fringes. The same source noted that in Ghana and Nigeria, for example, remittances encourage the conversion of land for homes, which fuels peri-urban sprawl.

Infrastructure Development and Sprawl

Infrastructure development can be indirectly supported by remittances in a number of ways. First, higher household income from remittances may raise demand for goods and services, which would enhance government tax receipts. This money can then be used for projects involving public infrastructure. For example, remittances have a favorable effect on financial growth in Sub-Saharan Africa, which may increase government capacity for infrastructure investment (Gupta et al., 2009).

Second, the development of urban infrastructure can be supported by the stimulation of construction and related businesses through the utilization of remittances for real estate and housing investments. This is supported by an empirical study on structural transformation and remittances by

Abbas et al. (2023), which found that more urban infrastructure development may draw remittances to real estate investment, resulting in further urbanization and the need for additional infrastructure, such as roads and utilities.

The third factor is diaspora philanthropy, in which communities of people from other countries combine their remittances to finance communal initiatives, such as water systems, schools, or health facilities. This is supported by an empirical study titled "The Drivers of Diaspora Donations for Development: Evidence from the Philippines" by Licuanan et al. (2015), which found that diaspora members contribute to community projects that could benefit everyone in the community by producing local public goods.

By supporting local infrastructure in peripheral areas, remittances increase accessibility and appeal to potential residents. Without official planning, this "road-led sprawl" frequently happens (Tacoli et al., 2015). The same study also revealed that in Ghana and Nigeria roads financed by remittances allowed urban areas to grow horizontally. In migrant-sending regions, remittances frequently solve government inefficiencies to finance small-scale infrastructure improvements (such as roads, schools, and water systems). In this regard, Mabogunje (1980) emphasizes that Nigerian migrants funded rural infrastructure, including community halls and boreholes, to enhance local living circumstances.

Remittances are used by households to purchase solar panels or private electricity connections, so putting indirect pressure on governments to increase the number of public utilities. Given this, remittance-receiving households in Guatemala are 30% more likely to invest in electricity infrastructure (Adams & Cuecuecha, 2013). Furthermore, Orozco (2002) noted that migrant associations (such as hometown associations) combine remittances to construct roads, clinics, and schools in their local communities. For example, diaspora groups from Mexico and the Philippines frequently use "matching funds" programs with local governments to finance infrastructure in their communities of origin. In Ethiopia, remittances support community-led infrastructure is more accessible and speeding up sprawl in the country's peri-urban areas (Mberu & Wittenburg, 2013). Their study also found that diaspora-funded road upgrades in Ethiopia's Oromia region have allowed towns like Bishoftu to expand horizontally.

Informal Settlements and Unplanned Growth

Tenure insecurity is sustained when households buy land in informal settlements using remittances, frequently without official titles. Speculative land markets in unofficial peri-urban areas are fueled by remittances from Latin America and Africa (Zoomers, 2010). Additionally, Adhikari and Hogley (2015) claimed that remittances support informal land markets and horizontal expansion in Nepal and

Bangladesh, and they finance informal housing in quickly growing urban peripheries, contributing to unregulated spatial growth in Bangladesh and Nepal. In flood-prone slums in Dhaka, Bangladesh, remittances from Middle Eastern migrants fund informal housing, increasing vulnerability and spurring the spread of informal settlements without enhancing living conditions (Siddiqui & Sikder, 2019).

Due to a shortage of reasonably priced formal housing, migrant households frequently use remittances to construct or rent homes in informal settlements. Unplanned urban sprawl is caused by this. In Guatemala, for instance, remittances encourage the construction of informal housing in peri-urban areas where migrants avoid official land markets (Cohen, 2005). Additionally, Osili (2004) pointed out that 60–70% of urban inhabitants in Nigeria live in informal settlements, where housing is financed by unofficial remittance channels like Hawala. Additionally, the study discovered that because of their limited property rights and the high prices of the official sector, Nigerian migrants spend their remittances in informal housing

Moreover, Smith (2006) claimed that in Mexico, self-built housing in unofficial communities is financed by remittances from the United States, resulting in hybrid rural-urban landscapes. In communities such as Zacatecas, Mexican migrants finance informal housing that combines modern and traditional elements. Additionally, Gebre-Egziabher (2019) pointed out that remittances support informal housing in unplanned communities, which frequently lack essential facilities such as in Ethiopian cities like Dire Dawa and Bahir Dar. Similar study found that households in Dire Dawa that receive remittances construct dwellings on property they have illegally acquired, eschewing municipal planning.

Remittances and Land Use Conversions

The transition from subsistence farming to residential or commercial land use close to urban centers in Ethiopia is financed by remittances. Accordingly, De Brauw et al. (2014) claimed that households in the Amhara region that receive remittances are more likely to turn farmland into small companies or rental properties. Remittances frequently finance the conversion of agricultural property to non-farm, commercial, or residential uses (Gray and Bilsborrow, 2014). Farmland is being reduced and rural landscapes are being changed as households invest in homes, enterprises, or speculative land purchases. Remittances, for example, cause land fragmentation and the abandoning of subsistence farming in Ecuador in favor of urban-oriented land usage (Gray and Bilsborrow, 2014).

The money that migrants send home to their friends and family is a significant contributor to global monetary flows and has an impact on how land systems are maintained and altered. According to Mack et al. (2023), remittances are a major financial factor affecting land transformation in many

receiving nations. Remittances are anticipated to continue to contribute to additional land modifications and have an impact on the livelihoods of those who depend on that land, given the size of the migrant population and the growing quantity of money that goes back home as a result.

The way land is used in developing nations can be altered by remittances, or money sent home by migrants. Families may, for instance, stop farming and leave land uncultivated, or they may purchase additional land for housing, creating more residential areas. Remittances can help families own and develop land in some areas, such as rural Mexico, but they can also result in less land being used for farming in Albania. In rural Ghana, remittances contribute to land ownership by financing registration, which stabilizes land use, and in the Philippines, they increase demand for real estate by converting agricultural land into housing (Ang et al., 2009; Mack et al., 2023).

Remittances have the potential to influence land use in Africa in a number of ways, such as increased ownership, changes in land use, abandonment, effects on the environment, and enhanced tenure security. According to country-specific examples, remittance flows in Nigeria have the potential to reduce agricultural use and increase urbanization; in Ghana, they have improved land tenure security and formalized land ownership; in southern Morocco, they have increased investments in agricultural land and the potential for residential conversion; and in Senegal, they have probably increased residential development in peri-urban areas (de Haas, 2003; Cotula, 2004; Orozco, 2006; Addai et al., 2021).

2.14 Challenges of Remittance-Driven Urban Growth in Ethiopia

In Ethiopia, remittances are a major contributor to the economy and urban development, but they also present a number of issues that must be resolved to ensure sustainable and equitable growth. This section addresses the key challenges associated with remittance-driven urban growth in the country, based on findings from a number of studies.

2.14.1 Rapid and Unregulated Urban Expansion

Urban Sprawl and Lack of Planning: The fast influx of remittances has accelerated urbanization in Ethiopian cities, but this growth is frequently unplanned and unregulated, leading to inefficient land use and urban sprawl (Abadura & Sokido, 2024). For example, Ethiopia's urbanization rate rose from 3.7% in 1984 to 14.2% in 2007, with a large percentage of the population relocating to urban centers (Schmidt & Kedir, 2009).

2.14.2 Strain on Urban Infrastructure and Services

Inadequate Infrastructure: urban areas are expanding so quickly that they are overtaxing their energy, water, sanitation, and transportation infrastructure. One key issue, for instance, has been the

absence of sufficient transportation networks, which limit urban dwellers' access to economic possibilities and job search activities due to high commuting expenses (Franklin, 2015).

Inequitable Access to Services: Remittance-driven urbanization has also resulted in unequal access to essential services. While certain regions have better housing and sanitation, others especially informal settlements do not have access to basic utilities like power, clean water, and medical care (Ambaye & Abeliene, 2015).

2.14.3 Displacement of Vulnerable Communities

Development-Induced Displacement: Remittance-funded urban development initiatives have resulted in the eviction of impoverished urban families. According to Ambaye and Abeliene (2015), development initiatives in Bahir Dar have increased the dangers to the urban poor's livelihood by causing the loss of dwellings, a lack of compensation, and the division of cohesive social groups.

Inequitable Compensation: One example of the difficulties associated with displacement is the Kasanchis reconstruction project in Addis Ababa. Although the majority of households had been in the area for more than 25 years, only 32 percent of them received compensation, and the majorities were forced to migrate without assistance (Yirgalem, 2018).

2.14.4 Inequality and Social Segregation

Economic Inequality and Social Segregation: Urban expansion spurred by remittances has made economic disparity worse. Although government-sponsored condominiums have helped middle-class households, the wealthiest households would rather build their own homes, and the poorest households cannot afford these units. As a result of households moving to more remote locations, social ties have weakened and access to local resources including markets, schools, and health facilities has decreased. Concerns about safety and pollution increased, and adolescents who relocated to condominiums reported fewer recreational opportunities (Pankhurst et al., 2022).

Lack of Effective Urban Planning and Governance

Weak Institutional Capacity: Remittance-driven urbanization has accelerated beyond local governments' ability to efficiently plan for and control urban growth. Studies shows that urban planning techniques fall short in addressing environmental sustainability, community involvement, and spatial growth (Abadura & Sokido, 2024).

Inefficient Land Use Management: Ineffective urban land allocation and land speculation are the results of poor land use regulations. For instance, two of Addis Ababa's biggest problems have been highlighted as the disregard for public needs and the disregard for urban plans (Yirgalem, 2018; Xu & Wang, 2020).

2.14.5 Environmental and Health Concerns

Loss of Green Spaces: Green areas are crucial for boosting mental health, reducing the urban heat island effect, and increasing air quality, but their availability has decreased due to rapid urban expansion. According to studies, Ethiopian urban areas have an unacceptably low average amount of green space per person, and many citizens do not have access to green spaces that are close by (Gelan & Girma, 2021).

Pollution and Health Risks: Increased pollution has also resulted from cities' unchecked growth, especially in informal settlements. When compared to their former neighborhoods, adolescents who relocated to new dwellings expressed more worries about pollution (Pankhurst et al., 2022).

Mitigation Measures

Several mitigation strategies can be put into place to address these issues, based on academic research, government legislation, and globally recognized best practices that have been modified for Ethiopia's unique circumstances:

Integrated Urban Planning

It is crucial to create comprehensive urban plans that take remittance-driven expansion into account. To direct expansion in a sustainable way, this entails strategic land use planning, zoning, and development laws. In order to manage the effects of remittances, integrated planning techniques are described in Ethiopia's "National Urban Development Policy" (2018) (World Bank, 2015). Additionally, Gebre-Egziabher (2019) and Yemeru (2018) claimed that by promoting equity, guaranteeing environmental resilience, and striking a balance between private investments and public benefits, integrated urban planning will lessen remittance-driven urban growth in Ethiopia. Implementing participative frameworks, enforcing spatial restrictions, and coordinating diaspora capital with national interests are all critical to success.

Slum Upgrading and Affordable Housing Programs

By putting policies in place to give low- and middle-income groups access to affordable housing, the rising costs brought on by remittance investments can be offset. Accordingly, it was suggested by Teller and Hailemariam (2021) that remittance-backed municipal bonds be used to finance inclusive slum-upgrading initiatives. For instance, the Addis Ababa Slum Upgrading Project (AASUP) might incorporate contributions from the diaspora.

Incentives for Productive Investments

Through tax breaks or other advantages, remittance recipients might be encouraged to invest in industries other than real estate, such small enterprises, agriculture, or education, which can help diversify the economy and ease the strain on urban real estate markets. The "Remittance for

Development" program of the National Bank of Ethiopia encourages remittances to be directed toward productive industries (NBE, 2023).

Financial Literacy and Inclusion

It may be possible to reduce speculative real estate investments by giving remittance receivers access to formal financial institutions and educating them on prudent investment choices. One aspect of the National Bank of Ethiopia's financial inclusion plan is expanding remittance beneficiaries' access to banking services (NBE, 2021). Furthermore, according to the World Bank (2020), increasing diaspora populations' access to formal banking is thought to be a mitigating approach to direct remittances into money for affordable housing. To provide low-interest home loans, for example, Ethiopia's Diaspora Trust Fund might collaborate with regional banks.

Community Participation

Remittance-driven urban growth in Ethiopia can be turned into a vehicle for sustainable and equitable development with community involvement. Ethiopia can improve infrastructure, reduce sprawl, and match diaspora investments with national urban priorities by formalizing grassroots engagement. Incorporating local communities into planning and development procedures guarantees inclusive urban growth that satisfies the requirements of all inhabitants, promoting sustainability and a sense of ownership. Remittance-funded housing contributes to Ethiopia's fast urbanization, which frequently eschews official planning frameworks. By ensuring that locals and migrant households work together on land-use planning, community engagement helps to prevent haphazard growth. For example, the Integrated Housing Development Program (IHDP) in Addis Ababa, which incorporated community input, increased housing equity but encountered difficulties because of a lack of grassroots involvement (Gebre-Egziabher & Yemeru, 2019).

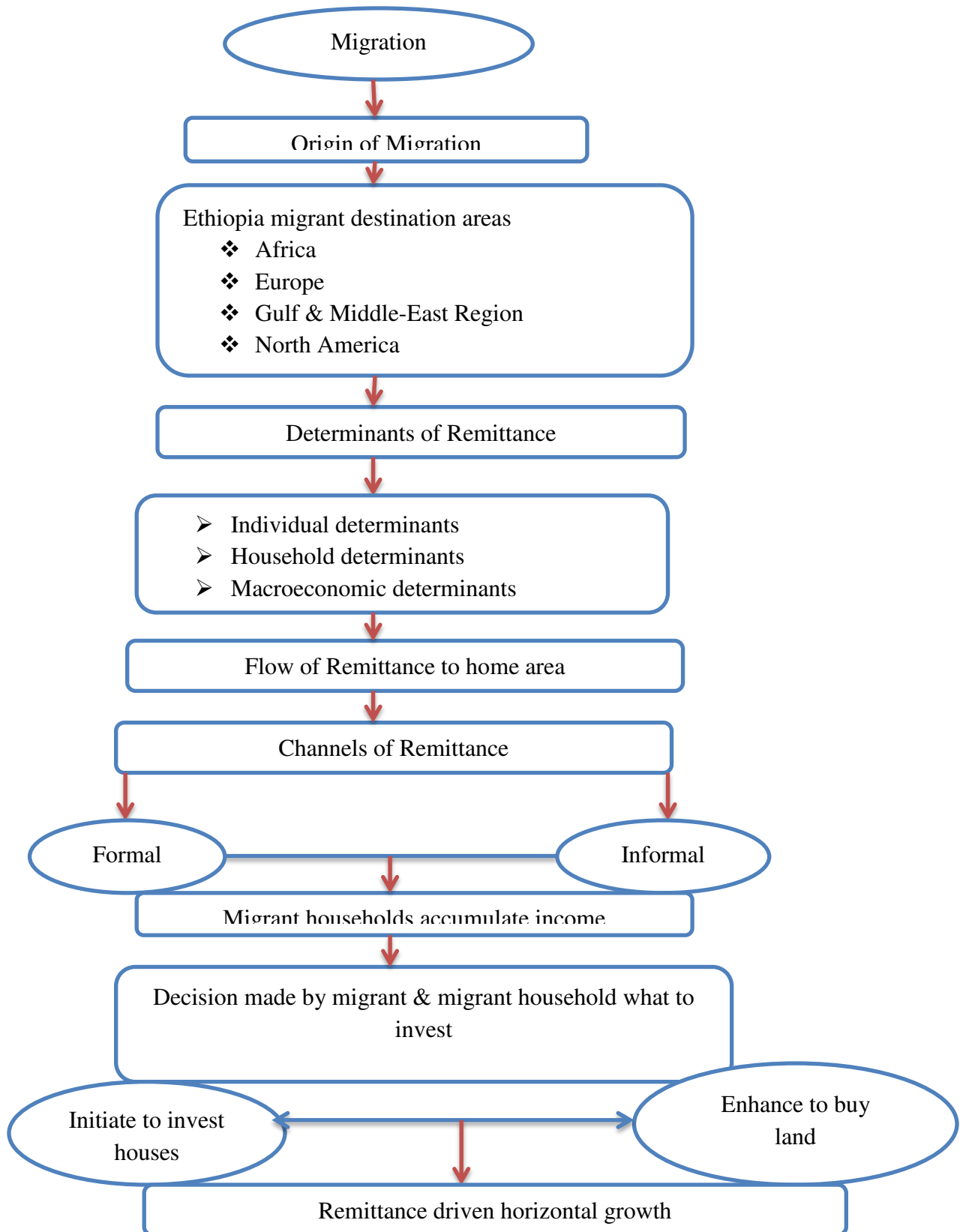


Figure 2.10. The link between migration, remittance and horizontal spatial growth
(Source: Developed by author's compiling the review part, 2022)

Fig. 2.10 depicts that the nexuses of migration, remittance flow, and spatial growth. These can be explained by the fact that remittances from around the world enhance migrant households to build up their income, which in turn increases their ability to buy land and build new houses. Housing development and other urban infrastructure projects have led to horizontal spatial growth fueled by remittances.

As a general remark the discussion so far, remittance-driven horizontal spatial expansion has two sides. Both potential and major obstacles are presented by remittance-driven horizontal spatial growth, which is defined by unplanned urban expansion driven by diaspora investments in housing and land in developing countries like Ethiopia. Remittances give people vital financial support and boost local economies, but when they are disproportionately allocated to low-density, private dwellings, they worsen socio-spatial inequality, urban expansion, and environmental degradation.

In developing nations, remittances drive both acquisition (a concentration of land ownership) and fragmentation (subdivision of plots), which changes the land markets. These procedures frequently put immediate financial gain ahead of long-term sustainability, which makes laws governing land markets and safeguarding smallholders necessary. Through housing, land markets, and infrastructure, remittances in Ethiopia serve as a stimulus for horizontal spatial growth, transforming peri-urban environments. Significant problems have been brought about by it, nevertheless, including as unchecked urban growth, strain on infrastructure, the uprooting of vulnerable groups, inequality, and environmental damage.

Addressing these issues, calls for a comprehensive strategy that balances public welfare with private investments, making sure that cities expand in a way that is efficient, inclusive, and respectful of environmental boundaries. Policymakers must strike a balance between migrant investments and sustainable urban planning in order to harness remittances for inclusive development in Ethiopia through the adoption of inclusive and sustainable urbanization methods.

2.15 Migration Driven Land Use/Land Cover Change

Land use is the human endeavors and uses of land such as farming, building, mining, or conservation. It is an expression of the socio-economic choices that influence land management (IPCC, 2019). In contrast, land cover refers to the tangible elements found on the surface of the Earth including grasslands, forests, water bodies, urban infrastructure, and bare soil. The bio-physical properties of the land are described (Turner et al., 2007). Urbanization brought on by migration is one of the human activities that are intimately linked to LULC change. According to satellite images, urbanization has resulted in a considerable loss of agriculture, wetlands, and forests, especially in megacities like Lagos and Jakarta (Seto et al., 2012). In the remaining rural regions, agricultural

intensification further fragmented ecosystems, decreasing biodiversity and interfering with carbon sequestration (Foley et al., 2005).

Urbanization brought on by migration is an unavoidable aspect of economic growth. According to Rabinson (2003) cited in Eyaya (2014), urbanization causes changes in the landscape, particularly the spread of concrete and impermeable surfaces as well as the loss of agricultural and forestland. Particularly in regions of the world that are undergoing rapid change, it is critical to comprehend these relationships between human activity and its effects on the landscape. In addition, he found that the primary cities and excessive urbanization are the primary causes of the loss of productive agricultural land, which is the foundation of the economies of developing nations. In this rapidly expanding area, there are sizable rural-urban margins where land uses such as rural settlement; contemporary residential areas, industries, urban-based agricultural, out-of-town shopping, and service centers intersect.

Migration is a major factor in spatial growth, whether it be cross-border or from rural to urban areas. Sub-Saharan Africa and South Asia are two developing regions where rapid urbanization has resulted in LULCC, unplanned urban sprawl, and a strain on resources and infrastructure (UN-Habitat, 2020). In this context, Brenner and Schmid (2015) noted that the peri-urban areas where migrants frequently settle hasten the transformation of natural or agricultural landscapes into residential and industrial zones. By avoiding official planning procedures and often using an informal approach, this spatial expansion exacerbates socio-economic disparities

The quality of the habitat and ecological integrity are seriously threatened by the changes in land use and land cover (LULC) brought about by migration and urbanization. Farmland used for crop production has decreased, and habitat loss is the result of a complicated interaction and coupling process between land use/cover change and habitat quality (Bodo et al., 2021). Konyango et al. (2021) justified that because of unchecked land use change, which leads to land use disputes, incompatible land uses, unplanned developments, and unorganized land structures, the stability of peri-urban areas is seriously threatened.

Population pressure, climate sensitivity, and unequal development are the main drivers of Ethiopia's migration, spatial growth, and LULCC. Accordingly, Teferi and Abate (2018) observed that since 2000, Addis Ababa's spatial expansion has increased by 20%, encroaching on agricultural and wetlands area. For example, agriculture has been replaced with unplanned settlements and industrial zones at the urban outskirts of Bole and Sululta. The World Bank (2020) reports that secondary cities like Bahir Dar and Mekelle are expanding at a rate of 4–5% per year due to population expansion, infrastructure improvements, and foreign investments.

Ethiopia's national development policy, which aims to improve living circumstances and infrastructure, heavily relies on urbanization (Jenberu & Admasu, 2020). The rise of cooperative housing developments created to serve the growing urban population is a noteworthy illustration of this urbanization (Jenberu & Admasu, 2020; Wubneh, 2023). This process affects the land environment, changing habitat quality, and LULC even if its main objectives are to improve the living conditions of homeless urban dwellers and create affordable housing (Wubneh, 2023).

The processes of migration, spatial expansion, and LULC change are intricately linked and influence human-environment systems. Economic opportunity, conflict, or environmental stressors all contribute to migration, which drives urban growth and peri-urban sprawl, frequently at the price of farms, wetlands, and forests (Seto et al., 2012). This spatial reconfiguration increases climate vulnerability, disturbs biodiversity, and fragments ecosystems. The Amazon's deforestation borders and the rapidly urbanizing parts of Asia and Africa are examples of this (Laurance et al., 2001; IPCC, 2019). On the other hand, LULC changes like water scarcity or land degradation can create cyclical feedback loops by causing displacement itself (Gray & Bilborrow, 2013).

2.15.1 Theories of Land Use/Cover Change and Urban Transformation

Urban Transformation Theory

The transformation theory looks at how socio-economic, environmental, and political factors change land systems across time. Rather than emphasizing gradual changes, it highlights non-linear variations in LULC, like sudden urbanization or deforestation. According to Turner et al. (1993) and Lambin and Meyfroidt (2010), these changes frequently arise from the interplay between bio-physical feedbacks (such as soil degradation and climate impacts) and human decision-making (such as agricultural growth and policy changes). The framework of urban transformation theory aims to explain the dynamics and processes of change in urban areas (McCormick et al., 2013; Holscher and Frantzeskaki, 2021). Urban transformation is the concept that formulates and directs urban change. Urban transformation theory discusses how cities and towns' peripheries are developing (Sadewo & Syabri., 2018). It looks at the different variables and forces that influence how cities evolve, expand, and reorganize over time (Holscher & Frantzeskaki, 2021).

According to Holscher and Frantzeskaki (2021), there are three main perspectives on urban transformation: the first views cities as places that have undergone transformation; the second views the transformation of the urban system, which is dynamic and defined by specific functions like housing, transportation, the economy, food, and healthcare; and the third view of urban transformation emphasizes how urbanization and urban development are causing changes at the local, national, and international levels. Urban transformation theory aims to enhance the economic, social,

and spatial circumstances of cities (Mishra & Pandit, 2013). Urbanization is one of the main concepts and ideas of urban transformation theory, which states that it recognizes the continuous process of urbanization, which includes the expansion of urban areas in terms of population, economic activity, infrastructure, and the built environment (Holscher & Frantzeskaki, 2021). It investigates the reasons of urbanization, its effects, and how social and spatial structures are affected. The most powerful macro process of change in coupled human environment systems that has been seen to date may be urbanization (Wolfram, 2016).

Spatial reconfiguration Theory

The spatial reconfiguration theory focuses on how the physical organization and connection of land systems are reorganized over time by human and environmental forces. It highlights non-linear change patterns like fragmentation, aggregation, or edge effects that affect human livelihoods (like resource access) and ecological functions (like biodiversity loss). According to Turner et al. (2007), this theory takes into consideration feedback loops in which spatial patterns both influence and are influenced by socio-economic and bio-physical causes. Additionally, as noted by Tang (1995) and Endres (2014), the theory concentrates on the spatial aspect of urban transformation, which encompasses modifications to the built environment, land use, and urban form. It looks at things like suburbanization, urban renewal, gentrification, and the growth of new urban centers.

According to Laurance et al. (2001) and Seto et al. (2012), urban sprawl, agricultural growth, and infrastructure development (such as roads that split forests) are the primary proximate drivers of spatial reconfiguration, while population dynamics, land tenure policies and climate change are the underlying drivers. For instance, building roads in the Amazon makes it easier to reach isolated locations which lead to deforestation. This results in a "fishbone" pattern of cleared land. Similarly, peri-urban environments can be changed by urban zoning regulations that concentrate development in particular corridors.

Urban transformation and spatial reconfiguration theories offer crucial frameworks for comprehending the dynamic interactions between urban landscapes and human activity. Migration, technological innovation and globalization are the main drivers of urban change, which reshapes cities through processes including gentrification, the creation of informal settlements, and the construction of infrastructure (Brenner & Schmid, 2015). According to Batty (2013), spatial reconfiguration theory emphasizes how these shifts result in non-linear patterns like sprawl, fragmentation, or polycentricism that modify resilience, socioeconomic equity, and ecological connection.

According to these theories, urban systems are dynamic and constantly changing due to feedback loops between biophysical limitations like resource scarcity and socio-political decisions like zoning regulations (Seto et al., 2012). Unplanned changes, such as the ecological deterioration of peri-urban areas or the uprooting of vulnerable communities by megaprojects, frequently make inequality worse (Roy, 2009). Going forward, there are ways to guide urban expansion toward sustainability through adaptive governance that combines advanced spatial analytics, green infrastructure, and participatory planning (World Bank, 2021). These frameworks, which prioritize justice and resilience, can assist cities in navigating the intricacies of the anthropogenic while striking a balance between development and environmental constraints.

2.16 Knowledge Gaps

A number of fundamental knowledge gaps motivated to pursue this research. Most of the aforementioned few works, including Bekele (2005), Miheretu (2011), Mabin et al. (2013), Tacoli (2015), Angel et al. (2016), Caldeira (2017), Melesse and Nachimuthu (2017), Mohammed et al. (2017), Teshome and Belete (2017), Tassie (2018), Kebede (2017), Mekuriaw and Gokcekus (2019), Baye et al. (2020), Fentaw (2020), Kassegn and Endris (2020), Koroso (2021), Lamson-Haill et al (2022), Weldegebriel et al. (2021), Baye et al. (2023), and Chandel (2023) have conducted empirical study on topics related to migration and urbanization. Although these studies have provided important insights into the broad causes and effects of migration and urbanization, they have not really examined the relationship between migration dynamics and horizontal spatial expansion.

Furthermore, several of the empirical studies mentioned above examined the effects of urban growth on peri-urban areas, paying special attention to expropriation and the loss of agricultural land. They also considered migration as one of the factors contributing to urban growth without connecting the two. In Ethiopia, there is also a substantial amount of work on urban and peri-urban concerns (Getahun, 2005; Baye, 2009; Tegenu, 2010; Fetene; 2019; Dires, 2021; Mengist, 2022; Talema and Nigusie, 2023) few examples. Nevertheless, how migration dynamics support settlement expansion and spatial growth in medium-sized urban areas like Woldia is not discussed. Therefore, there aren't many studies on how migration dynamics affect towns' spatial growth. This dearth of systematic scholarly research on the nexuses of migration dynamics and horizontal spatial growth in medium-sized towns calls more empirical study to support the formulation of guidelines to manage the growing migrant population on peri (urban) by applying sound land management systems.

Currently, there are a few studies on urban issues conducted in Woldia, including those by Baye (2009), Fasigo (2009), Tekaye (2016), Alebel et al. (2022), and Sefiw et al. (2024). The researcher is not aware of any prior research conducted in Woldia on this topic. The nexuses of

migration dynamics with spatial growth which this studies to be assessed are not covered in the studies mentioned above. Since no other study has been done in Woldia with these characteristics, the research is unique in this respect. When considered in this context, these gaps provide important directions for the ongoing research in Woldia. Therefore, this study uses Woldia's peri-urban neighborhoods as a case study to try to close these gaps that previous research did.

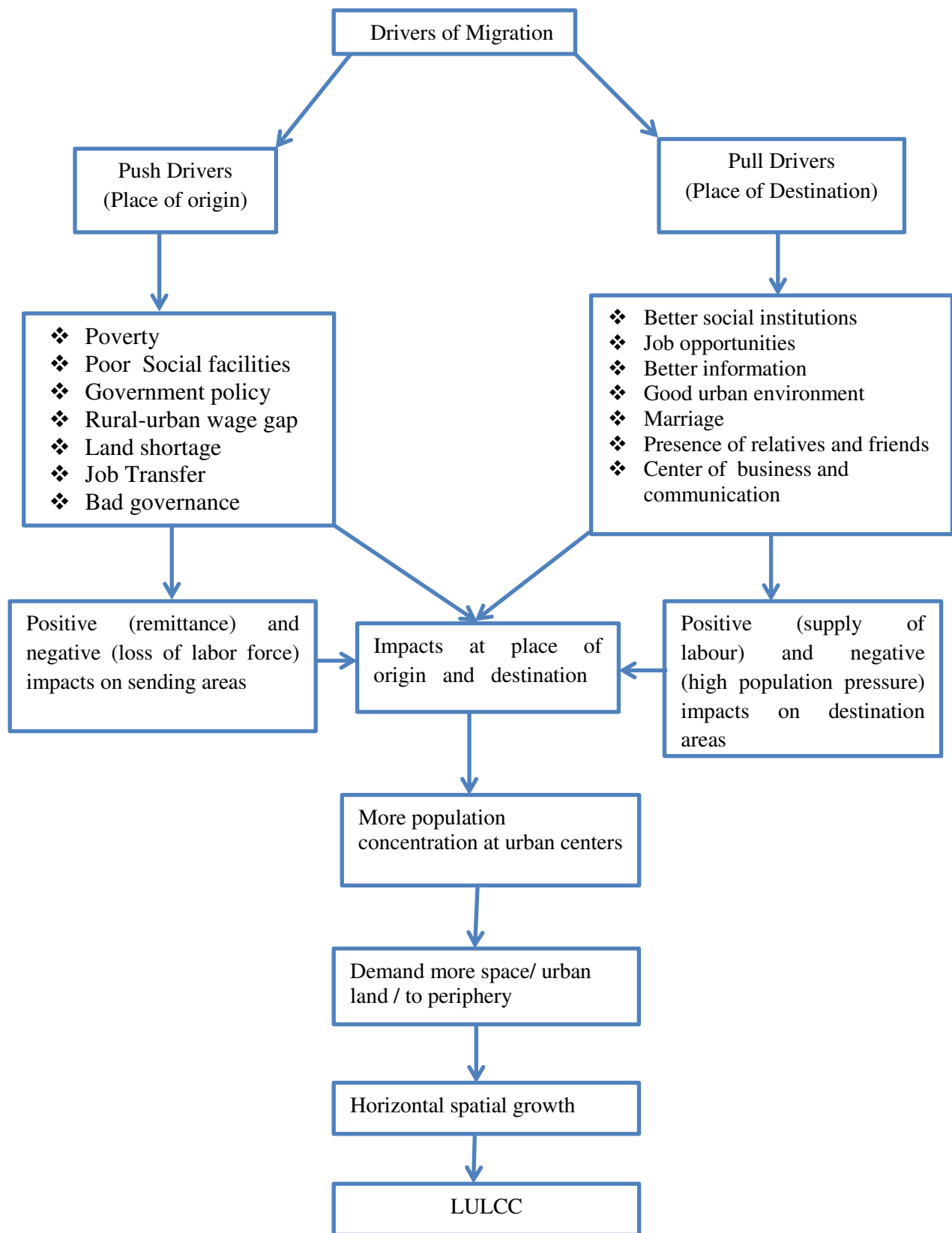


Figure 2.11. Drivers and effects of migration, and implication for spatial growth

(Source: Developed by Author's based on literature review, 2021)

Fig. 2.11 shows that how the development of urban landscapes is influenced by the intricately linked processes of migration dynamics and horizontal spatial growth. Pull factors at the destination (urban regions) and push factors at the place of origin (rural and/or urban areas) have had significant positive and negative effects on both areas. Migration frequently has the adverse effect of concentrating people in urban centers and reducing the labor force in home areas. However, there are other benefits, such as labor supply to the destination areas and remittances being sent home. The graph also illustrates how migration-driven population concentration is driving urban areas outward expansion to the periphery. This expansion is typified by the expansion of housing, infrastructure, and economic activity into rural or underdeveloped areas.

From the empirical review that has been covered so far, we may conclude that urban development is greatly influenced by the interconnected process of migration, remittances, and horizontal spatial growths. Due to a variety of push and pull causes, people migrate from rural to urban areas or across borders frequently. Remittances, the money that migrants send home to their families in their home countries is vital to local economies because it raises household incomes, lowers poverty, and finances small-scale investments.

Remittance inflows can promote horizontal spatial growth, which is defined by the urban areas outward expansion as more people and businesses move to the periphery due to improved infrastructure and higher economic activity. As a result of this outward development to peripheral areas, surrounding prime farmlands in Africa in general, and Ethiopia and Woldia in particular are subsequently encroached upon. Therefore, in order to meet the increasing population pressure brought on by migration, there was a demand for farmland to be moved to the periphery that was being encroached upon by urban usage.

However, this outward expansion can also lead to problems like urban sprawl, environmental deterioration, and the burden on local resources and services. Overall, the link between migration, remittances, and horizontal spatial growth highlights the intricate dynamics of urbanization and economic development as well as the necessity of sustainable planning to handle the benefits and challenges that come with them. Thus, efficient urban planning and policy interventions are essential to manage these processes and guarantee inclusive and sustainable horizontal spatial growth, striking a balance between the needs of growing populations and the maintenance of social and environmental well-being.

CHAPTER THREE: RESEARCH METHODOLOGY

3. Research Methods and Materials

3.1 Description of the Study Area

Location and Relief of the Town

Geographically, Woldia lies astronomically between $11^{\circ} 48' \text{ N}$ - $11^{\circ} 50' \text{ N}$ latitudes and $39^{\circ} 34' \text{ E}$ - $39^{\circ} 36' \text{ E}$ longitudes. The town is situated at an average elevation of 2000 meters above sea level and is found in North Wollo zone of Amhara National Regional State, Ethiopia. The digital elevation model (DEM) reveals that Woldia is characterized by rugged topography that consist very high mountains, deeply incised canyons and gorges, valleys, plateaus and plains ranging from 1548- 2437 meter above sea level (Alebel et al., 2022). The study area is located in the northwest highlands and related lowlands, more precisely in the northern-central massif subdivisions.

The town serves as the capital of Woreda, Guba Lafto, and North Wollo Zone. Its name, which translates to "a meeting central place," indicates that it was acting as a break-of-bulk location for the surrounding districts (Baye et al., 2020). Woldia, which links Mekele, Tigray, and Addis Ababa, the country's capital, is situated along the main north-south highway. It is roughly 180 kilometers from Lalibela, a popular tourist site, 360 kilometers from Bahir Dar, the regional seat, and 521 kilometers from Addis Ababa.

The intersection of three important highways Addis Ababa–Dessie–Woldia, Bahir Dar–Gondar–Woldia, and Mekele–Woldia—makes Woldia a key transportation hub (see **Fig. 3.1**). In addition to connecting Woldia to other regions of the nation, these roadways provide commuters with easy access to the town core. Woldia is therefore a crucial intersection that links Mekele to the north, Addis Ababa to the south, Djibouti to the east, and Bahir Dar and Gondar to the west. Furthermore, it serves as a primary road to Lalibela, a well-known religious and tourist destination. With Mount Gubarja to the east and Mount Gebrael/Ariro to the north, the town's rapid growth is mostly directed southward, north-westward, and westward due to geographic limits. The flat Mechare plains to the west of Woldia, which stretch to the Tikur Wuha and Melka Demo rivers, offer ideal conditions for additional development (Baye, 2009).

The gradual Guba Lafto escarpment and the level Mechare plain to the south offer room for more growth, which is only constrained by Mount Guba (called locally as Guba Terara). At first, Woldia expanded linearly due to this topographical arrangement. In its current form, the town shows a unified urban structure and is compact, nearly hollow, when viewed from above.

Although the Guba Lafto escarpment has limited southern expansion, the building of a 12-kilometer roadway through Guba Lafto from Jeneto Ber to Woldia has been a major factor allowing progress in this direction. In addition, the level terrain of Mechare, the construction of Shehi Ala Mudi stadium, Woldia University, Woldia College of Teacher Education, Woldia Polytechnic College, the Jeneto–Woldia highway, and the Woldia–Gondar–Bahir Dar highway all contributed to the growth of Woldia (Baye, 2009). An increase in business investments and the establishment of a designated industrial zone have further boosted the town's economy. Financial organizations have also been more helpful, offering urban lending alternatives and investment opportunities to promote growth. Sustained growth and regional development, however, still depend on advancing industries including tourism, hotel investment, transportation, commerce, and agriculture.

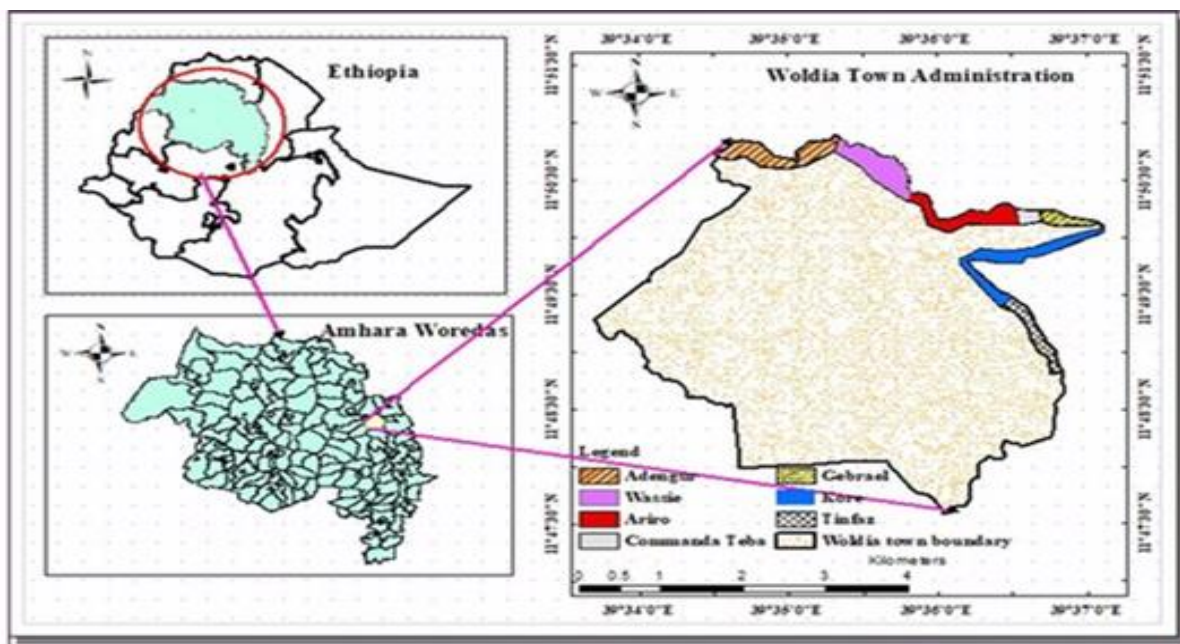


Figure 3.1 Location map of Woldia and sample of the study peri-urban areas

(Source: adopted from Baye et al., 2023, P.4)

Drainage

Despite the absence of a significant river, the Shelle stream which rises on Gebrael Mountain and passes close to Woldia University, runs from the north to the southwest. Woldia is located in the river basins of “Tikur Wuha” and “Melka Demo.” The drainage pattern of Woldia is governed by the surrounding mountains or physical configuration of the town’s position. The elevation of the town decreases from north to south, north-west to south west, and east to west. Hence, the general trends of the flows of the surface water / drainage are from north to south, north-west to south west and east to west wards. Then the flow of surface water originating from these mountain areas joins Shelle steam which finally flows to the north west of the town and joins the perennial river, “Tikur Wuha”, found

approximately 5kms west of the town. There are no perennial rivers, lake or ponds within or around the town, except “Shelle” stream which is found at the southern part of the town (Fasigo, 2009).

Actually, the basin that the town occupies is the “Shelle stream”, which is the tributary of Tikur Wuha. Still further, but very small, the actual ground over which Woldia is built is the valley streams of the seasonal “Totit” stream and intermittent “Nitaf Dingay” streams. Thus, although large rivers are not available within the built up area of the town, these small streams are sources of washing clothes and drinking water and water for a considerable number of the inhabitants of Woldia (Baye, 2009).

Climate and Rainfall

As far as climate is concerned, Ethiopia’s climate could have been a true tropical climate, but in reality, this is not the case because of the high altitude, which modifies it. Temperature data obtained from Sirinka metrological station reveals that Woldia experiences a subtropical/Woina Dega/ climate with a mean maximum temperature of about 28.97⁰ c and a mean minimum temperature of 14.03⁰ c.

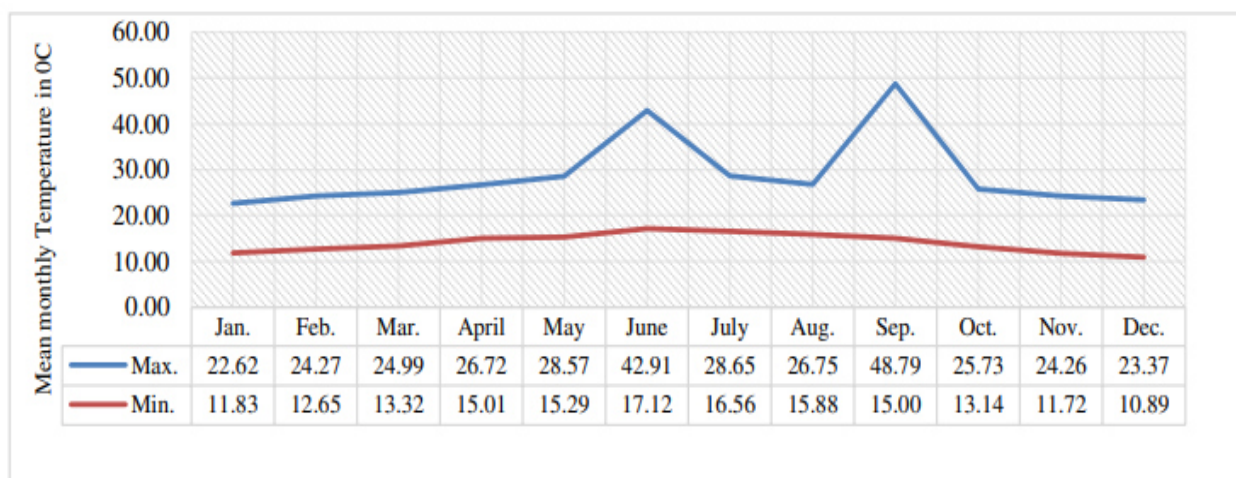


Figure 3.2 Mean monthly temperatures (in ⁰c) of Woldia

(Source: Author, 2021)

This is also confirmed by the fact that as with altitude between 1500 meters and 3500 meters above mean sea level in Ethiopia are considered as Woina Dega (subtropical), Woldia with an average altitude of 2000 meters above mean sea level, therefore belongs to this zone. The coldest temperature occurs in Woldia between October to December and January to March while the hottest temperature occurs in June and September as shown in **Fig. 3.2**.

The rainfall pattern of Woldia is bimodal, with heavy rainfalls occurring between the months of mid-June to mid-September, and short rains occurring between March to the beginning of May. An analysis of data obtained from Sirinka metrological data reveals that the highest amount of rainfall

occurs during the summer season (June, July and August), and the lowest amount occurs from October, November, and December and between January and February. Even though the magnitude of rainfall in the town is so erratic in its magnitude over the months of the year, the town receives a mean annual rainfall of above 95.65 mm per year as shown in the following **Fig. 3.3**.

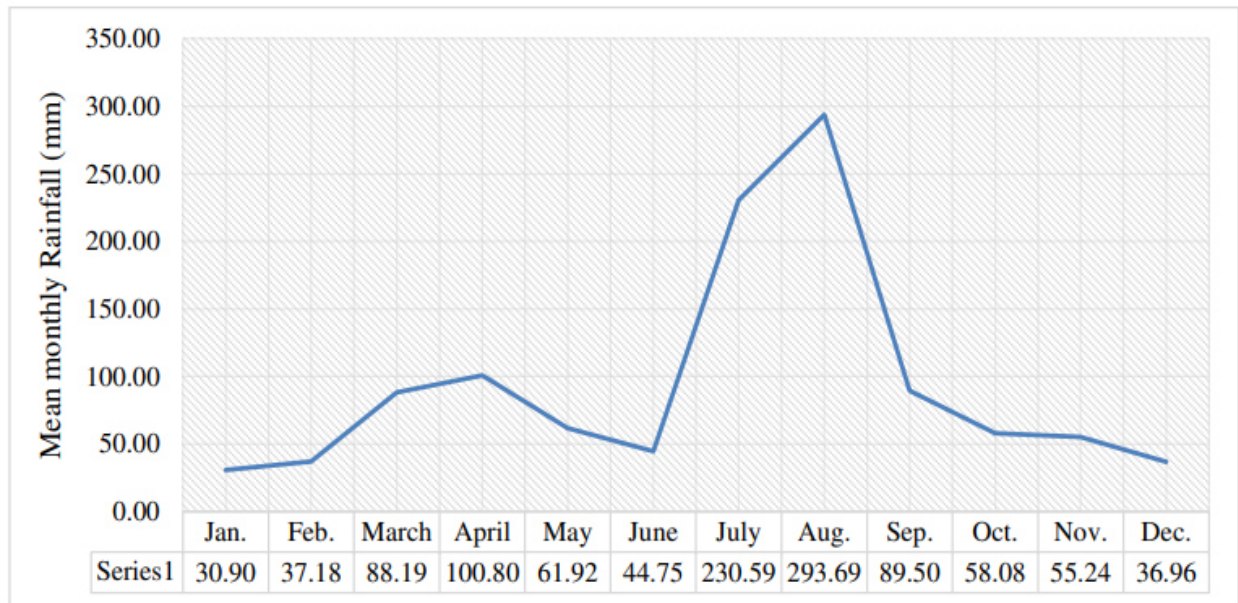


Figure 3.3. Mean monthly rainfall of Woldia in mm

(Source: Developed by author, 2021)

3.2 Study Site Selection

Woldia has recently been divided into three Sub- cities: These include Ras Ali, Taitu Bitul and Yeju Sub-cities. The research sites of Michael and Mechare are located in Ras Ali sub-city. Ariro, Adengur-Gebriel, and Tinfaz are located in Taitu Bitul. The research site of Teklehaymanot (Admas Bashagr) is found within Yeju sub-city. These sites are purposefully chosen because these peri-urban areas are the place that migrants found.

The study area is located in North Wollo zone of Amhara Regional State's at the urban peripheries of Woldia town. These sites were chosen primarily because they are visible as areas experiencing rapid spatial growth on the outside of the town. Specifically, the most suitable areas for current and future urban expansion are the level area west of Woldia extending towards the 'Tikur Wuha' (Black Water) River, the southern and south-western flat plain near Mechare, and the northern and north-western areas around Adengur and Michael. This growth direction is due to the limitations posed by steep terrain on the eastern margin at Kore and the north-eastern slope of Mount Gebriel.

These sites were chosen using the following standards: (1) areas where prime agricultural land on the rural periphery has been encroached upon for various urban uses due to rapid spatial growth,

(2) areas with relatively few physical obstacles to expansion and sufficient land supply, (3) areas where a large number of migrants are building both formal and informal houses, and (4) peri-urban areas that provide migrants with transitional settings by blending urban and rural features to help them adjust to urban life. For this reason, these areas are essential to facilitating the more seamless integration of migrants into the urban fabric (see **Fig.3.1** above).

3.3 Peri-urban Study Sites

Ariro site: This site is located south of Gebriel Mountain's slopes and includes Debregelila (Commanida Teba) Kebele 01 and the northern most parts of Yejugenet Kebele 04 of Woldia town. Settlement in this area are most concentrated in the south part and dispersed in the north because the southern part was established first and the northern part is more recent,

Adengur-Gebriel: This site encompasses the hilly regions of Mount Gebriel in the south-west, which restrict the town's physical growth in that direction, and Adengur, where new communities have predominated in the north-west. It includes the urban periphery of Yejugenet Kebele 04 and Adengur Kebele 08 of Woldia in the south as well as a minor road leading to Gebriel in the east.

Mechare site: This area is situated on the level plain of Mechare Meda in the south-west corner of the town, where new settlement is growing. This is also the direction of Woldia Stadium. It has a boundary with the Melkadem and Tikur Wuha rivers to the west. This area will prolong the town's future spatial growth. It can also be found south of the Gondar-Bahir Dar highway's main carriageway. This location is traversed by the recently built route that connects Addis Ababa-Dessie to Woldia

Michael site: found west of Yejugenet Kebele, southwest of Adengur Kebele, and north of the major Gondar-Bahir Dar Road. This site is home to the town's biggest market, known as the "Makisegno Gebeya/Tuesday market." This location also serves as the town's primary industrial area. Since the "Makisegno Gebeya/Tuesday market," the town's Central Business District (CBD), and the industrial buffer zone are all close by, the south, south-east, and south-west portions of the region are marked by a moderately migrant population concentration.

Teklehaymanot / Admas Bashager site: This area lies north of Woldia University, west of Tinfaz site, and east of Mechare site. Numerous reasons contribute to the area's high migrant concentration. First, the local government has made this site an appealing place for people looking for new home options by providing applicants with urban land plots. Furthermore, one of the main factors attracting people to the neighborhood is Woldia University's close proximity. For a variety of reasons, such as access to higher education, work opportunities within the university, and the desire for employment opportunities in the surrounding area, many migrants relocate here in order to be near the university.

Tinfaz site: It is bounded by Teklehaymanot to the south-west, Woldia University to the south-east, Debregelila (Kebele 01) to the west, the foothills of the Kore and Gubarja Mountains to the east, and Awura Godana to the south. Mount Gubarja/Kore's physical constraints have limited the town's physical growth in the north-eastern portion of the site. This site has primarily been developed and is now being developed on Gubarja Mountain's forest-reserved foothills. Similar to nearby Kore, the places are potentially dangerous because landslides and rock falls could happen at any time.

3.4 Research Design

A preliminary field survey and in-person observations were carried out prior to the actual data collection in order to fulfill the study's stated research questions and objectives. In this study, a mixed-approach research design that combined quantitative and qualitative methodologies was utilized. In particular, the quantitative method's descriptive survey design was used. Moreover, the conclusions from the quantitative analysis were supported by qualitative data obtained through focus groups and interviews.

3.5 Target Population, Sampling Technique and Sample Size

3.5.1 Target Population

Municipal managers and experts, kebele managers, Woldia Woreda Health Departments, experts in Zonal Labor and Social Affairs, as well as rural-to-urban, urban-to-urban migrants and intra migrants (those who relocated from the center of Woldia to its outskirts) are among the study's target audience. The town is separated into six urban and four rural kebeles. Adengur, a rural kebele that is very close to the town and all of the urban kebele were deliberately selected for the study. These kebeles were home to the majority of migrant households.

3.5.2 Sampling Technique

Both probability and non-probability sampling methods were employed in this study. From the probability sampling, simple random sampling was used to give an equal chance for the respondents and minimize bias. From non-probability sampling, purposive and snowball sampling were employed. Purposive sampling technique was employed deliberately since the study was considered a good means of obtaining information that made the sample more representative of the entire population. Moreover, from non- probability sampling, the study employed snowball sampling for obtaining information regarding to the source of remittance from migrant families. This was because to study hidden population such as migration, snowball sampling is paramount.

3.5.3 Sample Size Determination

According to data obtained from Woldia Woreda Health Department, the entire urban population of the town in the year 2020 /21 was 89,707. 65,465 of these were residing in the town's study areas. Out

of the 65,465 people, 37,887 were migrants. The sample size was determined by using the formula of Yamane (1973) while taking the margin of error of 5% and the degree of confidence (95%).

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

Where, N = target population

e = sample error estimated (0.05)

n = total sample size

$$\text{Therefore, } n = \frac{37,887}{1+37,887(0.05)^2} = \mathbf{395}$$

Table 3.1. Sample size distribution of each study site

Name of Sites/Kebeles'	Total Population	No. of Migrants	Sample Size Distribution
Ariro/Debregelila (01)	9,502	4300	$(4300/37,887) \times 395 = 45$
Tinifaz (02)	9,501	2500	$(2500/37,887) \times 395 = 26$
Admas Bashager (03)	11,042	9200	$(9200/37,887) \times 395 = 96$
Yejugenet (04)	11,042	5200	$(5200/37,887) \times 395 = 54$
Michael/Deferge (05)	8301	4687	$(4687/37,887) \times 395 = 49$
Mechare / Kebele (06)	9,940	7500	$(7500/37,887) \times 395 = 78$
Adengur Gebriel(08)	6137	4500	$(4500/37,887) \times 395 = 47$
Total	65, 465	37,887	395

(Source: Woldia Woreda Health Department, 2021)

A simple random selection technique was used to choose 395 sample household migrants from their kebele list out of the 37,887 overall migrant populations. Specifically, a list of migrants was requested from each kebele following the determination of the sample size. After obtaining the lists, the researcher was selected a starting number at random. For example, in an area with a total migrant population of 7500, and a sample of 78, the population was divided by the sample size yielding approximately 96. A random number between 1 and 96 was then chosen (in this case 40), which was used as the first sample. The second sample was selected by adding 96 to the starting number (136), the third sample was 232, the fourth sample was 328 and son on, and until the desired sample size was achieved. The same procedure was applied to the remaining sites.

3.6 Data Sources and Methods of Collection

3.6.1 Data Sources

Both primary and secondary data were employed in the study to produce reliable and compressive information. Using questionnaires, key informant interviews and FGDs, primary data were gathered

from migrant respondents, kebele managers, mayors, zonal experts, and municipality officials and experts. Census results, official city administration and town municipality records, published and unpublished data, various research papers, books, the internet, and articles that are pertinent to the issue being studied were all sources of secondary data. Besides, World Bank, IMF, AFDB, NBE and other relevant reports were used to supplement remittance related issues.

In this study, Landsat images acquired in 2000, 2010 and 2020 were used. The images, which are geo-referenced and radio-metrically corrected, were accessed from the United States Geological Survey (USGS) website (<http://www.usgs.gov>, accessed on 15 March 2020). Landsat images are medium-resolution remote sensing tools that are used for land use and land cover change analyses. Thematic Mapper (TM) sensors for 2000 and 2010, and OLI sensor for 2020 in Landsat have been in use for land use classifications.

Obtaining adequate datasets requires the selection of the type of sensor, relevant wavelength bands, and date(s) of acquisition. Dry season and cloud-free images which is less than 10 percent were used since they make conducting the analyses easier. To cover the full study area, one satellite image (one scene) for each year were acquired and processed in arc GIS software. Each satellite image was obtained with a spatial resolution of 30 m, i.e., a single pixel in the image represents 30 by 30 m on the ground.

Table 3.2 Research questions (RQ), Data types and sources, and Methods of Data Collection

Research Question (RQ)	Data Type (primary, secondary, quantitative, qualitative)	Data Sources	Method of Data Collection
RQ-1	Primary, Secondary Qualitative, and Quantitative	Peri-urban migrant, government officials, CSA, documents	Questionnaires, Interview, FGDs, document review
RQ-2	Primary, Secondary Qualitative, and Quantitative	Peri-urban migrant, government officials	Questionnaires, Interview, FGDs
RQ-3	Primary, Secondary Qualitative, and Quantitative	Peri-urban migrant, government officials, documents	Questionnaires, Interview, FGDs, document review (WB, IMF, AFBD, NBE etc)
RQ-4	Primary, Secondary, Quantitative, Qualitative	Landsat image TM & OLI, documents	Remote Sensing GIS, ground Surveys and field Observations via GPS

(Source: Constructed by the author, 2021)

3.6.2 Data Collecting Procedures and Tools

In order to streamline the research process, a pre-test was conducted on a few chosen study sites to confirm whether or not there were any flaws, misconceptions, or other ambiguities in the first draft of the questionnaire. Ten (10) migrant respondents six (6) male and four (4) female were given a pilot test of the first draft in the Admas Bashager, Mechare, and Yejugenet sites prior to the actual survey's was administrated. The pilot participants comprised the population from which the sample was to be drawn. These pilot respondents were chosen from the migrant population on the basis that they best reflected the characteristics of the larger migrant population.

Since Amharic is the town's working language and many of the migrant residents are thought to be able to speak and understand it, the final version of the questionnaire was written in English and

translated into the Amharic language. Three lecturers from Woldia University two from the English language and literature department and one from the geography and environmental studies department were consulted in the translation of the questionnaire.

395 households were surveyed by moving door to door. The administration of the survey involved seven (7) enumerators six (6) male and one (1) female. Two (2) grade 12 students, three (3) Woldia Preparatory School teachers, and two (2) Woldia High School instructors were chosen in accordance with predetermined criteria and received training on how to administer data collection. In addition, each data collection site had four (4) supervisors, all of whom were male and Woldia University lecturers. Finally, 395 questionnaires were administered for migrant respondents. Furthermore, 18 key informant interviews and 14 Focus Group Discussions members (FGDs) with two groups of seven members for each were conducted. Over all, a total of **435** participants from different categories have taken part in this study as shown in **Table 3.3**.

Table 3.3. Type of instruments and number of sample participants for data collection

No.	Categories	Department	Job Title	No. of Respondents
1	Mayor	Mayors' of the town	Principal and Deputy Mayor	2
2	Financial Sector	Awash, Commercial and Dashen Banks	Managers	3
3	Municipality	Urban land development and management	Urban land manager	1
			Urban planner (designer)	2
		Cadastral Office	GIS expert	1
			Data encoder	1
4	Woreda Office	Health	Managers	1
			Data experts	1
4	Zone Worker and Social Affairs Office	Social Department	Social Experts	3
		Economic Department	Economic experts	3
5	Kebele 03, 04,05,06 and 08	Kebele Administrative	Kebele managers	5
6	FGDs	Urban and rural Kebeles	Elderly's of six Urban Kebeles	12

			Elderly's of one Rural Kebele	2
6	Kebele 01 and 02	Local illegal construction control and peacekeeping	Law	1
			Complain resolution expert	2
6	Peri-urban migrants		Ordinal people	395
Total				435

(Source: Constructed by author, 2021)

Data Collecting Tools

Questionnaire

Due to its self-administered nature and ability to be disseminated to a large number of people simultaneously, the questionnaire was employed as the primary data gathering tool in the study. A questionnaire enables the collecting of more data from large number of respondents in a limited amount of time.. Furthermore, it can reduce the interviewer's bias and allow the use of large sample sizes, both of which will lead to more trustworthy and consistent outcomes. The survey includes both closed-ended and open-ended question types.

The researcher communicated the study's objectives and expected outcomes to the participants before distributing the questionnaire. Before responding, the participants were free to ask any questions they had and get any clarifications they needed on the questionnaire. By providing participants with a thorough grasp of the study, the likelihood of incorrect responses is reduced.

Interview

To collect qualitative information from key informants, the study employed semi-structured and structured interviews. The study used face-to-face interviews. Before the interview begins, the researcher sets up an appropriate interview place, introduces himself, carefully discusses the purpose of the study, and assures the interviewees that their responses will remain private. Thus, in accordance with the planned schedule, interview questions were given to the target participants.

Accordingly, interviews were conducted with different employees of the mayor's office, the municipality, the zonal workers and social affairs office, Bank managers, local illegal construction control and peacekeeping experts, and the kebele manager office. To this end, interviews lasted between 20 and 70 minutes, with an average of 45 minutes. When the interview sessions were over, the researcher gave each participant a heartfelt thank you for the invaluable information they shared.

Focus Group Discussions (FGDs)

Focus group discussions (FGDs) were another technique employed in the study to confirm the information obtained from other sources. A deliberate selection of fourteen elders, two from each of the seven administrative kebeles of the study sites was made. Strategic selection criteria were used by considering their extensive knowledge of Woldia's past and present development offered insightful viewpoints for comprehending the intricacies of migration dynamics and horizontal spatial growth.

The focus group members were purposefully selected because most of them spent a significant amount of time in the area. Two FGD sessions were conducted: the first, with seven participants, took place in the Deputy Mayor's office, and the second, with the remaining seven participants, took place at the Municipality Office. With average interview duration of 70 minutes, the conversations lasted between 55 and 85 minutes.

Observation

In this study, the researcher has direct observation of the urban expansion, infrastructural development and other related issues by recording all the relevant data for triangulation purpose. During observation, the researcher was record relevant data using observation checklists, observation guidelines, and field notes pertaining to the subject of the study were made and accompanied by photographs. Examples of elements that were essential to the observational research included the town's current horizontal spatial growth to the periphery.

Document Analysis

The data gathered from the aforementioned primary sources has also been supplemented by secondary sources such as open websites, annual reports from the town's municipality, and local development plans. The town's urban planning documents served as the secondary source of information for the peri-urban areas under consideration.

3.7 Method of Data Analysis

Data collected in a variety of ways were crucial sources for comprehending migration dynamics and its implication for the horizontal growth of the town as well as inputs for the analysis under study. In order to investigate migration dynamics and the horizontal spatial growth of the town's, both quantitative and qualitative methods were employed.

Thus, following the collection and coding of the required data, Excel and SPSS version 21 were used to analyze the quantitative parts using descriptive techniques including tables, frequencies, percentages, and graphical representations. Moreover, for LULCC mapping techniques ArcGIS 10.4 were used

The qualitative method, which included an investigation of respondents' attitudes, opinions, and ideas, was used to characterize the numerical values of the findings in statement form. Moreover, open-ended questionnaires that were answered by interviewees, focus group discussions (FGDs), key informants, field survey observations, and document (text) analysis that takes the form of narrative are all critically examined in the qualitative analysis section.

3.8 Satellite Image Data Analysis

The information gathered from multiple sources, including field surveys, satellite imagery, Google Earth Pro, and pre-existing maps, was examined using GIS and remote sensing analysis. This study examined changes in land cover and land use patterns using a geographic information system (GIS) and remote sensing. Landsat satellite images from 2000, 2010, and 2020 were obtained for analysis. The information from these sources was divided into four categories: Barren land, agricultural land, built-up areas, and forest land. Furthermore, the analysis of land use and land cover changes can benefit from the use of remote sensing data (Tewabe & Fentahun, 2020; Hegazy & Kaloop, 2015).

The utilization of remote sensing data yields useful information, especially when it comes to precisely mapping urban areas with high-resolution images (Isah, 2014). Repetitive coverage and real-time data acquisition capabilities make remote sensing data indispensable for tracking the growth of urban and peri-urban areas (Gidey et al., 2023). The main focus was on mapping the conditions of urban expansion in the peri-urban area of Woldia town and analyzing changes in land use patterns over time.

3.8.1 Image Preprocessing

By controlling specific forms of cloud cover, image preprocessing can improve the quality of Landsat satellite images (Rwanga & Ndambuki, 2017). In this step, the satellite photos were corrected radiometrically to improve their quality. These methods were used to adjust for atmospheric effects, and sensor artifacts. In this step, picture correction, data alignment, and geo-referencing are used to eliminate errors, inconsistencies, and unnecessary information. The study area images were then extracted from the layered satellite image by clipping the study area using ArcGIS 10.4 software.

3.8.2 LULC Classification

To classify the different types of land cover in each image, image classification was done. Using supervised image classification techniques, this was accomplished. Supervised classification is the most widely used technique for the quantitative analysis of remote sensing image data (Rwanga & Ndambuki, 2017). Multiple training areas are used to represent a specific class in supervised image classification. GPS points, Landsat photos, and Google Earth images were used to select the training sites

Pixel-based supervised maximum likelihood classifier (MLC) was used to generate distinct maps of LULC classes from preprocessed Landsat satellite images. For the 2000, 2010, and 2020 images, four LULC classes' barren land, agricultural land, forestland, and urban area that were found in the study area have been categorized independently. For every research year (2000, 2010, and 2020), the total annual surface was quantified in order to ascertain the pattern of land use and land cover change for each category (**Table 3.4**).

Table 3.4 Major land use/cover classes and their description

LULC classes	Descriptions
Agriculture land	The area is covered with crop cultivation and includes rural settlements fenced with trees that are commonly found around homesteads.
Bare land	Areas under degraded lands and bare ground, including sand, gravel and bedrocks
Forest land	Areas covered by dense natural and plantation trees forming closed or nearly close canopies, mainly growing in the mountainous area and along the riverbanks and the road sides as well as open areas
Urban area	All built-up areas include Woldia University, stadiums, industries, factory site

3.8.3 Accuracy Assessment

According to Arumugam et al. (2021, and Rwanga and Ndambuki (2017), the validation or accuracy assessment is a crucial stage in the processing of remote sensing data). An accuracy study was conducted to verify the accuracy of the categorized map by comparing it with ground-truth data obtained from field surveys and land sat pictures with a resolution of 30 m by 30 m. The degree of accuracy was assessed using the kappa coefficient, producer accuracy, user accuracy, and overall accuracy.

Based on the Arumugam et al. (2021), the kappa coefficient was used to evaluate the accuracy of the derived classifications. The kappa coefficient of less than zero denotes poor agreement, 0.00–0.2 denotes mild agreement, 0.21–0.40 denotes good agreement, 0.41–0.6 denotes moderate agreement, 0.61–0.80 denotes substantial agreement, and 0.81–1.00 denotes nearly perfect agreement. **Overall accuracy (OAA)** is the total number of diagonally categorized pixels divided by the total number of reference pixels (sample) multiplied by 100. The correctness of a map as perceived by the map user is known as user accuracy. Essentially, the **User's Accuracy (UA)** tells us how often the class shown on the map will actually exist on the ground. Therefore, the user accuracy (UA) is the number of correctly categorized pixels in each category divided by the total number of classified

pixels in the category (the row total) times 100. The **Producer Accuracy (PA)** is the number of correctly identified pixels in each category divided by the total number of reference pixels in the category (the column total) multiplied by 100. **Table 3.5** shows that the OAA, UA and PA of the classified image of the study.

Table 3.5 LU/LC Accuracy assessment matrix

LU/LC	Bare Land	Forest Land	Agricultural Land	Built-up	Total
Barren Land	27	0	1	2	30
Forest Land	0	29	0	1	30
Agricultural Land	1	0	26	3	30
Built-up	3	0	1	26	30
Total	31	29	28	32	120
LU/LC	User Accuracy		Producer accuracy		
Bare Land	87.1%		90.0%		
Forest Land	100%		96.7%		
Agricultural Land	92.86%		86.7%		
Built-up	92.86%		81.3%		

In this study, the kappa coefficient was 0.9, or 90%. With a kappa coefficient of 0.9, the accuracy evaluation is almost perfect. Out of all the reference locations, the overall accuracy indicates the proportion that was accurately mapped. To illustrate the overall accuracy, a percentage is utilized. Every reference source had a 100% overall accuracy (OAA) and was classified correctly. In this investigation, the OAA was 90%, meaning that every pixel in the dataset was accurately identified and that the classification system was operating at a very high level overall.

3.9 Ethical Concerns and Considerations

The researcher and data collectors clearly explained the study's purpose and scope to participants after obtaining the necessary approvals and developing the data collection instruments. They made sure that participants were aware of how their data would be collected, anonymized, and kept private. In order to preserve accountability and transparency, they also made clear the procedures for gathering data as well as how the study's conclusions would be applied and disseminated. The participants were requested to sign an informed consent form, but they declined to do so because of political sensitivities and worries about possible consequences. Instead, verbal permission was

acquired after participants were fully informed about the purpose of the study and their withdrawal rights.

3. 10 Methods of Data Presentation

The results of the study are displayed in three different formats: text, tabular, and graphic. The outputs are shown using text and numbers in a textual presentation. The statistics tables describing the research outcome provide an example of tabular presentation. The results are also shown graphically, complete with pictures and figures. The debate in this regard was aided with diagrams, figures, and photographs.

3.11 Validity and Reliability

Triangulation of methods was used to address the validity of this study. Focus groups and key informants were used in this context to verify the information provided by interviewees during official interviews. In order to support them, a questionnaire was given to peri-urban migrants. This is known as method-triangulation, and it involves combining two or more different research strategies in the same population group.

The study also used a member check technique, which involved inviting two participants one from the municipality and the other from the zone works and social affair offices to confirm that the researcher's interpretations were based on and supported by the data collected during the interview. Additionally, an external auditor reviewed the entire project, which further enhanced the credibility of the research output. Three Ph.D. holders from the department of geography and environmental studies with excellent research experience in migration dynamics and horizontal spatial growth were invited to assess the research process and ascertain whether the findings, interpretations, and conclusions were based on and supported by the data.

In light of this, a pilot test of the questionnaire was conducted in order to determine whether there is any ambiguity or vagueness in the wording of the statements or questions. Since the respondent's character was the other component that adversely affected the response and the study's findings, data was gathered when the respondent's mode was suitable for data collection. Furthermore, survey questions were prepared and given to the principal and co-advisor for their approval. They examined it and gave their approval stating that the questions are adequate, clear, complete, and valid for gauging the study being investigated. Using Cronbach's alpha reliability test, which is typically used to assess questionnaire reliability, a reliability check was also performed on the instruments. The results showed a reliability check value of 78.6%, which is higher than the suggested level of 70% (Christensen et al., 2011).

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Results and Discussion

4.1.1 Socio-economic Description, the Response Rate of Respondents and Reliability Test

4.1.1.1 Response Rate of Respondents and Reliability Test

In order to fulfill the four research objectives, 395 peri-urban household head migrants were given questionnaires. The response rate is 100% since 395 of these have been correctly completed and returned. Governmental organizations (such as the Woldia Woreda mayor's office, the Woldia town municipality, the North Wollo Zone Workers and Social Affairs office, and the Kebele offices of 03, 04, 05, 06, and 06) as well as the town's elderly were included in this study.

Thus, in addition to peri-urban migrants, 26 individuals in total were interviewed using face to face self-administered interviews in various institutions and locations. Consequently, 435 individual replies in all were considered in the analysis. SPSS-21 was used to perform the Cronbach alpha test, which measures the reliability of the questionnaire items. As a result, the questionnaire given to peri-urban migrants had an alpha value of 0.786 (78.6%). The reliability of the questionnaire items is demonstrated by the fact that this figure is higher than the suggested threshold of 70% (Christens et al., 2011).

4.1.1.2 Demographic and Socio-economic Characteristics of Respondents

To obtain a clear image of the impact of migration, it is essential to comprehend the demographic and economic circumstances of the respondents. Determining the sample respondents' demographics (sex, age distribution, and marital status) and socioeconomic traits (faith, educational attainment, and work status) in the outset is crucial. Additionally, respondents' migration patterns, distance traveled, and place of birth presented.

Age and Sex Structure of the Respondents

Age and sex are the two main demographic variables that affect the migratory process. **Table 4.1**, which shows the respondents' age-sex distribution, 274 (69.37%) of the respondents were male and the remaining 121 (30.63%) were female. Additionally, **Table 4.1** shows that 69.01% of male respondents and 66.12% of female respondents were between the ages of 15 and 34 before relocating to Woldia town. Nonetheless, the majority of male respondents (79.2%) and female respondents (72.73%) were between the ages of 25 and 44 after moving to the area.

Table 4.1 also reveals that the majority of respondents were in their productive age range, with ages ranging from 15 to 44. The findings further depict that, the majority of respondents male and female were between the ages of 15 and 34 before moving to Woldia town. This suggests that

individuals in this age range are more likely to move to Woldia town. The research findings highlight migration pattern to Woldia town is age and gender-specific.

Table 4. 1 Age-sex distribution of sample Respondents’

		Sex of Respondents					
		Male	Percent	Female	Percent	Total	% Total
Age before Migration	<15	42	15.33	36	29.75	78	19.75
	15-24	132	48.18	51	42.15	183	46.33
	25-34	79	28.83	29	23.97	108	27.34
	35-44	15	5.47	3	2.48	18	4.56
	45-54	6	2.19	1	0.83	7	1.77
	55-64	0	0	1	0.83	1	0.25
	>65	0	0	0	0	0	0
	Total	274	100	121	100	395	100
Age after Migration	15-24	7	2.55	13	10.74	20	5.06
	25-34	124	45.26	56	46.28	180	45.57
	35-44	93	33.94	32	26.45	125	31.65
	45-54	38	13.87	14	11.57	52	13.16
	55-64	10	3.65	4	3.31	14	3.54
	>65	2	0.73	2	1.65	4	1.01
	Total	274	100	121	100	395	100

(Source: Field Survey, 2021)

Male migrants predominate, especially in the younger age group of 15–44, which suggests to a selective migration pattern. According to Ravenstein's law of migration, this migration pattern makes sense (Ravenstein, 1885). For the town, this has two effects: on the one hand, it offers a strong labor force that helps with its growth and development. However, in migrant's sending areas, it results in a reduction in the work force, which has a detrimental effect on agricultural output and population size. The gender disparity in migration flows in this survey is highlighted by the approximately 2:1 ratio of

male to female migrants. The fact that migration declines with age also suggests a dynamic in which younger people are more likely to migrate. Ravenstein's law of migration (Ravenstein, 1885) is likewise in line with this migration pattern.

Marital Status and Age Structure of the Respondents

The other demographic characteristics of the sample respondents were age and marital status. Based on the survey result shown in **Table 4.2**, 58.73%, 38.73%, 1.52%, 1%, and 1% of the respondents were single, married, divorce, separated, widower and widowed respectively before they relocated to the town.

Table 4.2. Marital Status and Age Structure of the Respondents'

		Age interval							Total
		<15	15-24	25-34	35-44	45-54	55-64	>65	
Marital Status before Migration	Single	65	114	46	6	0	1	0	232
	Married	12	64	61	11	5	0	0	153
	Divorced	0	4	1	0	1	0	0	6
	Widowed	1	0	0	0	0	0	0	1
	Widower	0	0	0	0	1	0	0	1
	Separated	0	1	0	1	0	0	0	2
	Total	78	183	108	18	7	1	0	395
Marital Status after Migration	Single	0	15	61	15	6	3	0	100
	Married	0	5	114	99	31	10	0	259
	Divorced	0	0	4	9	6	0	0	19
	Widowed	0	0	0	1	5	0	2	8
	Widower	0	0	0	0	1	1	2	4
	Separated	0	0	1	1	3	0	0	5
Total	0	20	180	125	52	14	4	395	

(Source: Field Survey, 2021)

Table 4.2 also shows that the respondents marital status with their age. Accordingly, the survey result depicts, 65.57% (married), 25.31% (single), 4.81% (divorced), 2.03% (Widowed), 1.27% (separated) and 1.01% (widower) respondents were the most common marital statuses following relocation.

The survey shows that the composition of marital status changed before and after migration, which has important ramifications for the town's economy and social services. The majority of respondents, who were mostly younger, between the ages of 15 and 34, were unmarried prior to their

migration. In contrast, the percentage of married migrants increased significantly after migration, especially among the age group of 25 to 44. This was followed by a decline in single migrants and a little rise in divorced migrants. This change indicates that individuals are increasingly getting married or changing their marital status after migration.

Married migrants may put a pressure on Woldia town's economy and social services, which could result in problems like unemployment and population growth. The decline in unmarried migrants also suggests a change in the demographic makeup of migrants, which could affect housing, job prospects, and local community dynamics. In line with this, Mengistu and Mulugeta (2018) conducted an empirical study on "the impact of rural-urban Migration on unemployment in urban Ethiopia evidence from Addis Ababa." found that the rapid rural-to-urban migration strains urban labor markets, resulting in unemployment and the dominance of the informal sector, According to their research, migration-driven population growth is also associated with societal pressures including competition for housing and services.

4.1.1.3 Socio-Economic Characteristics of Respondents

Educational Status of Respondents

Table 4.3 depicted a variety of educational levels. The findings indicated that prior to relocating to the town, 17.47%, 15.19%, 14.18%, 13.67%, and 11.14% had completed secondary, junior, preparatory, bachelor's, college diploma (for vocational training and college of teachers' education), and college, respectively. Nevertheless, 36.96%, 17.23%, 12.66%, and 11.14% of the respondents had completed their bachelor's, master's, college diplomas (vocational training and college of teachers' education), and secondary education (high school) after relocating to the town.

The research findings underscore the relationship between educational attainment and migration to urban areas, as evidenced by the data presented in **Table 4.3**. The analysis reveals a clear pattern: individuals with higher levels of education are more inclined to migrate to Woldia town. Many of the respondents had completed secondary, junior, preparatory, bachelors and college degrees prior to their migration. Even, after migration, there was a notable increase in the percentage of respondents who had attained bachelor's and master's degrees, indicating a trend where individuals with higher educational qualifications are more likely to relocate to urban areas.

Table 4.3. Level of Education before and after Migration

Level of Education	Education before migration		Education after migration	
	Frequency	Percentage	Frequency	Percentage
Illiterate	31	7.85	18	4.56
Read and write **	28	7.09	21	5.32
Primary school (1-6)	39	9.87	20	5.06
Junior (7-8)	54	13.67	17	4.30
Secondary (9-10)	56	14.18	44	11.14
Preparatory (11-12)	44	11.14	11	2.78
College Diploma	60	15.19	50	12.66
Bachelor	69	17.47	146	36.96
MSc/MA	14	3.54	68	17.23
PhD	0	0	0	0
Total	395	100	395	100

****Read and write:** Those respondents who attended basic and adult education.

(Source: Field Survey, 2021)

This tendency is consistent with the claims of scholars like Habtamu (2015) and Wondimagegnhu (2012), who contend that education is a key factor in determining migration patterns. Higher education gives people access to a wider range of options, more money, and the skills they need to deal with social, cultural, and financial difficulties in urban environments. Because of this, educated people are more prone to move from rural to urban areas in search of better opportunities and a higher standard of living. In addition, Clemens (2014) found that a survey study conducted in Burkina Faso and Senegal showed that people who have completed secondary or tertiary education are 50% more likely to want to migrate. Migration is fueled by higher education, which raises expectations of better opportunities.

Religious Composition of the Respondents

The religion of a community is one of its primary socio-cultural characteristics. People's daily routines alter as they move, which is influenced by the religious composition of the places of origin and destination. Woldia is the center of main religion in the country, which has drawn people to the town.

Table 4.4. Religious Composition of the Respondents

		Sex of Respondents					
		Male	Percent	Female	Percent	Total	% Total
Religion	Orthodox	225	82.12	84	69.42	309	78.22
	Muslim	35	12.77	27	22.31	62	15.70
	Protestant	14	5.11	10	8.26	24	6.08
	Catholic	0	0	0	0	0	0
	Other	0	0	0	0	0	0
	Total	274	100	121	100	395	100

(Source: Field Survey, 2021)

As indicated in **Table 4.4**, 78.22% of respondents identified as Orthodox Christians, whereas 15.70% and 6.08% of respondents identified as Protestants and Muslims, respectively. Additionally, according to the survey results, 82.12% of male respondents and 69.42% of female respondents identified as Orthodox Christians. On the other hand, whereas 12.77% of male respondents and 22.31% of female respondents identified as Muslims, 5.11% of male respondents and 8.26% of female respondents identified as protestant followers.

The results of the survey indicate that there was a significant gender disparity in religious beliefs. The finding shows that male respondents were more prevalent in the Orthodox Christian faith and female respondents were more common in the Muslim and Protestant faiths are responsible for this. This demonstrates how socio-cultural elements such as religion have an impact on migration trends and preferred destinations. In this regard, Ayalew and Teshome (2019) in their empirical study "Faith on the Move: The Role of Religious Networks in Ethiopian Migration to the Gulf States,") highlighted that migration to Gulf countries is facilitated by Ethiopian Orthodox and Muslim religious networks. Additionally, they found that faith communities lower the risks connected with irregular migration and that religious institutions offer migrants especially women employed as domestic workers, financial support, legal counsel, and spiritual solace.

Employment, Type and Nature of Works of the Respondents

The types of work that migrants had prior to migrating, together with their occupational standing, are determinants of their decision to migrate. Thus, a person's decision to migrate is influenced by their pre-migration occupation. **Table 4.5** shows the respondents' job status, work type, and nature in the study area.

According to the survey results in **Table 4.5**, 241 (61.01%) of the participants reported having a job, followed by 147 (37.22%) who claimed they were "Others" and 6 (1.52%) who indicated they were retired. 202 (83.82%) of the employed respondents were employed by the government, 28 (11.62%) by the private sector, and 9 (3.73%) self-employed. In contrast, 79 (53.74%) of the respondents who reported having a "others" employment status were in another sector, 61 (41.50%) were self-employed, and 7 (4.76%) were in the private sector. Additionally, the study shows that 209 respondents (86.72%) had permanent jobs, 22 (9.13%) had temporary jobs, 8 (3.32%) had seasonal jobs, and the remaining 2 (1.36%) had other jobs.

Table 4.5. Employment Status, Type and Nature of Works of Respondents

		Employment Status				
		Employed	Pensio	Unable to	Others	Total
			n	work		
Work	Self employed	9	0	0	61	70
Type	Private	28	2	0	7	37
	government	202	2	0	0	204
	Other	2	2	1	79	84
	Total	241	6	1	147	395
Nature of	Permanent	209	1	0	11	221
Work	Temporary	22	2	1	24	49
	Seasonal	8	0	0	28	36
	Others	2	3	0	84	89
	Total	241	6	1	147	395

(Source: Field Survey, 2021)

In this study, "Self-employed respondents" are those who operate in shops and commerce and have formally founded and registered their own firm. The term "private employed" describes those who work for reputable private companies that submit income taxes to the government. Others refer respondents who work as day workers, involved in loading and, unloading activities, and engaged in unregistered income-generating activities. Unable to work refers respondents who are those who are retired, elderly, and crippled.

The survey results show that the majority of respondents were employed and involved in the town's government sector. The respondents' job status and type of work reveal association between occupational status and migration with the majority working in Woldia town's government sector.

This result is consistent with Teye (2018), Berisso (2023), and Lee (1966), who found that people are more likely to migrate to urban areas in search of better opportunities and prospects when they have more education. Furthermore, in their empirical study titled "Rural-Urban Migration and Access to Formal Employment in Addis Ababa: The Role of Education," Mengistu and Gebremariam (2020) noted that out of 600 surveyed rural-urban migrants in Addis Ababa, only 18% were able to obtain formal jobs (such as those in banking or the government), mainly those with secondary or tertiary education. Uneducated migrants were directed into the informal sector, underscoring the importance of education in determining access to formal employment.

Household Income and Employment Status of the Respondents

In this context, "household income" refers to the income of the family members residing in the same residence, regardless of whether they are related to the householder. Therefore, data on income was gathered, and respondents who were peri-urban migrants were questioned regarding the average monthly income of their households. In order to do this, respondents were asked to provide the total monthly income of their households.

Consequently, the results show that, of the 395 sample respondents, 226 (57.22%) were in the low-income threshold and 150 (37.97%) were in the lower-middle-income group. The remaining 19 people (4.81%) had incomes that fell within the upper-middle range. The average monthly income of all respondents, calculated using the SPSS software, was 3140 Ethiopian Birr. This suggests that some respondents had incomes that were lower than the grand mean of all respondents. These numbers demonstrate that low-income earners made up the majority of migrant households in the study.

Table 4.6 World Bank’s income category (thresholds), GNI/capita (US \$), and Ethiopia’s equivalent

Income Category	GNI/ Capita	
	USD	Ethiopian Birr
Low-income	<1046	< 41,317
Low-middle income	1047- 4095	41,356.50 -161, 752.50;
Upper-middle income	4096 -12,695	161, 792 - 501,452.50
High income	>12,696	> 501,492.50

(Source: Field survey, 2021)

Based on Gross National Income (GNI) per capita, which is priced annually in US dollars using a three-year average exchange rate, the World Bank divides the global economy into four income groups: low income, lower middle income, upper middle income, and high income. The

current US dollar serves as both the unit of measurement and the criteria. The real-term cutoff points between each category are set, and they are modified annually to reflect price inflation. The categorization is updated annually on July 1st, the first day of the World Bank fiscal year, and is posted on the World Bank website (<http://data.worldbank.org>).

Furthermore, the World Bank claims that fresh thresholds are established at the beginning of the Bank's fiscal year in July and stay the same for a full year, regardless of any later adjustments to estimates. Accordingly, the new income-based classification thresholds (GNI/capita-current US dollars) as of July 1, 2020, are as follows: low income (GNI/capita < \$1046), lower middle income (GNI/capita < \$1047–4099), upper-middle income (GNI/capita < \$4096–\$12,695), and high income (GNI/capita < \$12,696) (see **Table 4.6**). According to this, the low-income groups of Ethiopians are those whose total annual income is less than 41, 317; lower middle-income groups whose total annual income is between 41,356.50 and 161, 752.50; upper middle-income groups whose total annual income is between 161, 792 and 501,452.50; and finally, the high-income group whose total annual income is greater than 501,492, given the US dollar to Ethiopian Birr exchange rate as of April 1, 2021 (one USD was worth 39.50 birr).

Table 4.7 Average monthly household Income and employment status of the respondents

		Average monthly household income						Total
		< 1624	1624-3333	3334-6193	6194-10150	10151-13926	>13926	
Employment	Employed	13	26	60	76	51	15	241(61.0)
Status	Pension	2	0	3	1	0	0	6 (1.5)
	Unable to work	1	0	0	0	0	0	1(0.3)
	Others	49	48	24	20	2	4	147(37.2)
Total		65	74	87	97	53	19	395
		(16.5)	(18.7)	(22.0)	(24.6)	(0.8)	(4.8)	(100)

(Source: Field survey, 2021)

In **Table 4.7**, the numbers in parenthesis represent percentages of the total (n = 395). Additionally, the people's income was influenced by the types of employment status they typically held. According to the survey's findings, 61% of the sampled households were employed, followed by other individuals (respondents who work as day laborers, loading and unloading activities, or engage

in unregistered income-generating activities), who make up 37.2% of the survey households as a whole. Pensioned households (those with respondents) make up 1.5% of the study's respondents, while the remaining 0.3% of respondents was unable to work (those with elderly and disabled respondents).

Table 4.7 also reveals the average household incomes and employment status of the respondents as a result of this survey. The results showed that, of the 395 sample household respondents, 226 (57.22%) had a monthly average income level of less than 3334 (in the low-income threshold group), while only 19 (4.8%) had a monthly average income of over 13,926 (upper-income thresholds). The remaining 150 (37.97%) were in the lower middle-income category, which is between Ethiopian birr 6194 and 10,151. Based on the survey data and World Bank standards, there were no household migrants who had high income thresholds in the study area.

Place of Birth of the Respondents

According to survey results shown in **Table 4.8**, 221 (55.95%) of the respondents were from rural areas while the remaining 174 (44.05%) were from urban areas.

Table 4.8. Place of Birth of the Respondents

		Sex of Respondents					
		Male	Percent	Female	Percent	Total	% Total
Place of Birth	Rural	163	59.49	58	47.93	221	55.95
	Urban	111	40.51	63	52.07	174	44.05
	Total	274	100	121	100	395	100

(Source: Field Survey, 2021)

Among respondents of rural origin, 163 (59.49%) were male and the remaining 58 (47.93%) were female, as shown in **Table 4.8**. In contrast, among respondents of urban origin, 40.51% were male and the remaining 52.07% were female.

Based on the survey results, the analysis of respondents' places of birth reveals a significant difference in origins between male and female respondents, with the majority originating from rural areas. This suggests that, due to pull factors like quality of life and economic opportunities, male respondents were more prevalent in rural origins and female respondents were more prevalent in urban origins which are consistent with Lee's pull factors in the context of destination areas (Lee, 1966).

Distances and Pattern of Migration of the Respondents

Moving from low-opportunity to high-opportunity communities is a common occurrence. Stouffer (1940) posited in his theory of intervening opportunities that a place with a greater number of

possibilities becomes the destination whereas an area with less opportunities becomes the point of origin. As a result, the more opportunities that differ between these two locations, the more people will migrate. Distance affects migrants' destination choice because they usually relocate to nearby places. According to Ravenstein's (1885) theory of the laws of migration, the number of individuals moving from one place to another decreases as the distance between them increases.

The survey data employed in this study also demonstrates the existence of this association of the migration pattern in **Fig. 4.1**. According to **Fig. 4.1**, out of the total sample respondents, 194 (49.11%) of the migrants traveled less than 30 km, while 102 (25.82%), 51 (12.91%), 25 (6.33%), 13 (3.29%), and 10 (2.53%) of the migrants traveled more than 70 km, 30-40 km, 40-50 km, 61-70 km, and 51-60 km, respectively. 57 (14.43%) and 25 (6.32%) of the sample respondents were intra-migrants and urban-to-urban migrants, respectively, while 194 (49.11%) were short-distance migrants, of whom 112 (28.35%) were rural-urban migrants.

As a result, the majority of respondents were short-distance migrants with rural-to-urban and urban-to-urban migrations, and the survey also revealed that the number of migrants decreased with increasing distance, except for those with urban and rural origins who traveled more than 70 km.

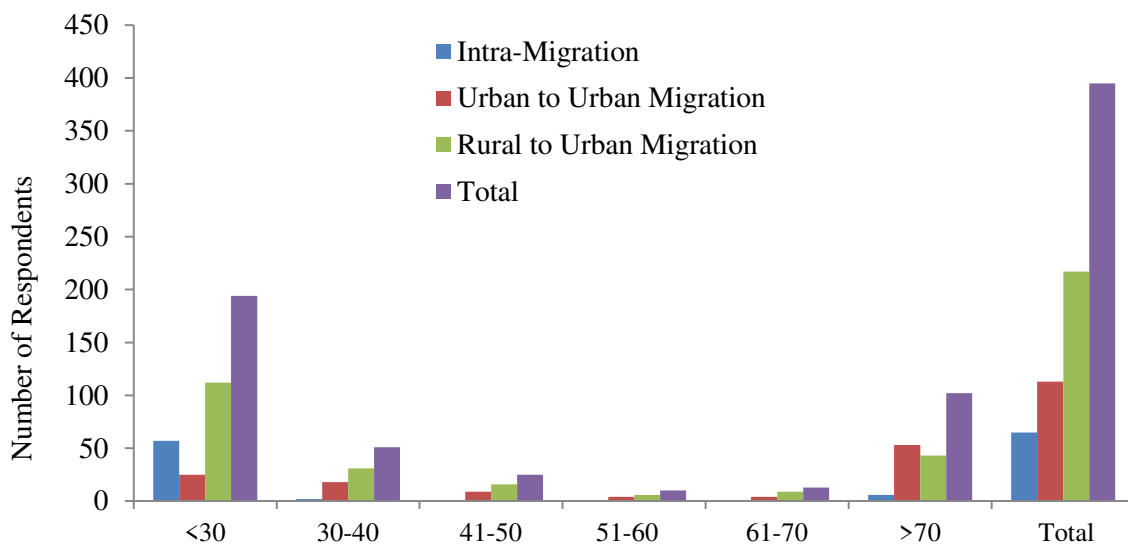


Figure 4.1. Distances and Pattern of Migration of Respondents

(Source: Field Survey, 2021)

Migration patterns and distances among respondents show how opportunity and distance affect migration choices. The majority of the migrants came from rural areas and moved to Woldia town, making short trips. This pattern of migration is in line with Ravenstein's law of distance in migration (Ravenstein, 1885), which postulates that because of accessibility and familiarity, migrants

prefer to settle in large industrial and commercial centers and that the number of migrants decreases with increasing distance.

4.1.2 Foundation and Development of Woldia

Before the foundation of Woldia, both the area in which Woldia is built and the surrounding areas were covered with thick forests and thorny bushes of indigenous origin of Acacia, Cactus, Olive tree, Juniper, and many more species. There were various types of wild animals sheltered inside these thick forests and thorny bushes including Hyena, Leopard, Gazelle, etc. As a consequence of the existence of thick and thorny forests and due to its swampy nature, the area was hardly occupied by people. For instance, due to its flatness and lower altitude than Adago and Abba Dinsa, Mugad was a marshy area until the occupation of the Italians who drained it. Besides, except for the only built-up areas of Defergay-Islam Kebele and Abba Dinsa hillock, the rest were unoccupied until the Italian occupation (Sarnessa, 1966). To this end, there were no permanent settlements in other areas for a long period because of its inhospitable environment and due to security reasons.

Nevertheless, it does not mean that there was a completely barren of people. In addition to the original settlers in and around Woldia, there were Oromo pastoralists who settled the surrounding area of the present-day Woldia. To confirm the existence of Oromo pastoralists, local place names are still in use in and around the town: Guba Lafto, Abba Mana, Mechare, Kibikaluu, Abba Dinsa, Melka Kole, Melka Demo, Karahatu, etc. As the structural plan document of Woldia (Woldia town administration structural plan, 2009) discloses, these people were pastoralists and they were not as such submissive to the authority of the then Yeju rules. Consequently, they constantly used to rebel against the existing political order.

Historically, Woldia was built at the hilltop of Gebrael by Ali I as the site itself was conducive to access to defense. It also arose as administrative (defensive) and commercial foci of the surrounding areas as well as far great distance areas such as Illubabor, Keffa, Shewa (Sarnessa, 1966). This implies that Woldia came to be embellished as a center of commerce or garrison or the seat of the then ruler Ali the great (Ali I). Ali I was founded Woldia shifting from Wedo to the hilltop of Gebrael due to the site factor of Woldia (the characteristics of Woldia itself). To this effect, Ali I is credited for the founding of Woldia. The exact date of the first settlement is uncertain but Woldia was established sometime between 1784 and 1788 (1777 E.C-1781 E.C) as the break-of-bulk point where the transportation necessarily changes (Sarnessa, 1966; Baye, 2009) due to the situational factor (the location of Woldia relative to other places). In general, the foundation and history of Woldia are principally attached to the following two fundamental reasons: Administrative and security reasons,

and Caravan trade reasons. The reign of Talaku Ali also called Ali the Great in Woldia was from 1784 to 1788 (Mekuria, 2013, p. 290).

The town's administrative role began sometime between 1784 and 1788 when Ali I transferred the seat from Wedo (sometimes Woidu) to the top of Mount Gebrael (Baye, 2009). Woldia as an urban center had emerged as a fortress and military garrison to serve the needs of the then provincial chieftain, Ali the great, at least one hundred years prior to the emergence of Addis Ababa in 1886 as the permanent capital.

According to Mekuria (2013), when Atse Tekle Giorgis imposed a tax upon his ruled people, the people gathered together and requested the king to withdraw his tax imposition. But, Atse Teklegiorgis refused the request of the people. The people secretly gathered together and appointed Ali the great as Ras: a ruler equivalent to the prime minister of Great Britain of that day and to have a royal family as a figurehead. During this time, Ras Ali I (talaku Ali meant Ali the great) was the ruler of Lasta, Wadla, Delanta, and Yeju (Baye, 2009). Ras Ali is gladly accepted and had rebelled against the then king Atse Tekle Giorgis of Gonder, and as a result, Ali fled from Gonder and descended to reside in Yeju, camping at the top of one of the mountains that have surrounded the present Woldia town as other rulers of the time because it was customary for Ethiopian rulers to camp on Amba-mountain tops.

Ras Ali I is said to have chosen this site because it was a mountain top and strategically important for military and administrative purposes. In the meantime, Ras Ali wanted to consolidate his economic and military base at Yeju and to this effect, he stationed at the top of mount Gebrael that bounds Woldia to the north. It was also true that on the top of this mountain, he built Gebrael church which is one of the churches he constructed in his territories during his ruling period. In line with this historical fact, Yirgalem (2008, p. 69) explained that, "for security and religious purposes, Ethiopians usually locate their settlements on the high ground. As a symbol of reflection churches in Ethiopia are built on higher ground while settlements occupy the lower ground".

The second reason was associated with the trade and commerce-caravan trade. While Ras Ali settled at the top of Mount Gebrael, the marketplace was at Woidu (sometimes called Wodo) some 20-25 kilometers south of Woldia. For security reasons, Ras Ali the great relocated the market place from Woidu to Jenete [genete] just a few kilometers to the west of the foot of mount Gebrael over which he camped. However, this selected place by itself was a marshy area, which was prohibited from marketing practices during rainy days and Ras Ali I was unable to control and command the people, as it was not visible from the top of the mountain (Baye, 2009).

Thus, ultimately, due to these two factors, unable to control and command the people he administered, according to the unpublished material and the story told orally, Ras Ali I relocated the marketplace from Jenete /Genete/ to the present marketplace at Deferge area namely Maksegno Gebeya between 1784 and 1788, the site of the present market area. The marketplace was formerly named 'Awaji Mengeria' which meant a place at which government messages were disseminated to its governed people during market days by government representatives. They took the attention of the people in the market via the loud sound of a drum.

It is probably during its establishment that Woldia became a commercial town. In this period, there was a gradual development of trade and commerce. For instance, merchants came from Begemidir and Gojam, bringing butter and honey; and on their way back they used to take salt bars (Amole) (Sarnessa, 1966) and still play an important role in commerce today. Woldia, as a caravan gate as well as a fledgling marketplace, proved to be an economically significant place to the Yeju authorities. However, trade between far places was in a challenging situation because the formation of Woldia and the development of the marketplace took place during the time of regional rulers (Zemene Mesafints). Hence, the absence of authorities permanently in the area, who at times made their administrative seat at Begemidir/Debre-Tabor/, harmed the security situation of Woldia and its environs because of the aggressive raid and looting of bandits on caravan traders.

However, as salt bars were a means of bartering and they had to be obtained at any cost, and as Yeju was a Gonderian empire, one can consider that this obstacle might be overcome though it was risky to go to the south. Through time, the market became popular and the caravan traders also found it a comfortable place to have a break from their tiresome journey. To that end, Woldia had served as a break-of-bulk center. In furtherance, traders also used to sell their merchandise in that market. As the market grew in its volume and importance, neighborhoods like Gonder Sefer, Gojam Sefer, Islam-Kebele, were created. In these places, the merchants used to take rest to feed their pack animals (Sarnessa, 1966; Woldia town administration structural plan, 2009). To sum up, the factors governing the position of Woldia were economic/commercial and defense/administrative, and Ras Ali's camp on the top of Mount Gebrael was an attractive and defensive position rivaling the market.

Naming

There is no standard system for the transliteration (in a sense of lettering) of most Ethiopian place names. The name of the capital city of Ethiopia, for example, is spelled in at least four different ways: Addis Ababa, Addis Abeba, Adis Abeba, and Adis Abbaba (Willians, 2016, P. xxxiv). Similarly, the study area is spelled out differently by different writers: Weldeya (Sarnessa, 1966), Woldiya (town administration structural plan, 2009), and Woldia (Baye, 2009; Fasigo, 2009; Willians, 2016).

Throughout this paper, except for citing one's work, however, I have used the word 'Woldia' which is most familiar and used by many individuals in their writings.

Regarding the origin of the name "Woldia", there are two main scenarios discussed in Sarnessa (1966) and Baye (2009) based on oral traditions. The first is the one derived from the Amharic word 'Set Wolda' and the second from Oromiffa term 'Welda'.

Scenario One: According to the first scenario, the name Woldia is said to have been originated from the Amharic term 'Set wolda'. To this scenario, by the time that Ali the great moved the marketplace from Jenete/Genete to the present marketplace at Deferge area, it is been expressed in the way that, one day, Ras Ali the great saw something white on the hillock at Deferge-Islam Kebele. Ali the great, then, sent his Balemuals-literally means loyalists to identify what that white matter was. When the loyalists arrived there, they found a woman with a baby waiting for her clothes (Shema) to dry up after washing. In due course, after returned to the camp at Gebrael, they told Ras Ali the great as 'Set Wolda' meaning a woman who has given born a child. After that, gradually, the place is changed into the name Woldia from the Amharic term 'Set Wolda' through time. This is the first story as to how the name Woldia has been evolved and consigned.

Scenario two: In addition to the first scenario, the second scenario associated the origin of the name to Oromiffa's term 'Welda'. In this regard, after Ras Ali the great is changed the marketplace from Jenete (Genete) just a few kilometers to the west of the foot of mount Gebrael to the present marketplace at Deferge area namely Maksegno Gebeya between 1784 and 1788, he then named it "Welda". To this end, the term Woldia is believed to be derived from the Oromiffa term 'Welda' meaning a meeting central place for all, as noted above Woldia was served as a break-of-bulk center for nearby small towns and far distance places. Hence, Woldia was started as some sort of meeting place-usually a marketplace-around 1784 and 1788 during the reign of Ras Ali the great and got its name during that time. Since then, the word "Welda" has been modified with time to Woldia and has been used till now.

The name derived from "Welda", the second scenario, is mostly agreed and accepted due to the following reasons:

- 1) 'Welda' bears a meaningful relation to Woldia,
- 2) The historical background supports the name means that:
 - 2.1 The camp place and Woldia are inter-visible,
 - 2.2 The area is rock and not muddy as Jenete and
 - 2.3 The word 'Welda' is an Oromo term meaning a meeting central place (Shengo) and the founder, Ras Ali the great, was also an Oromo (Sarnessa, 1966, p. 20).

History of urban spatial restructuring of Woldia

Hereby urban spatial restructuring refers to the pattern and trends of spatial growth of Woldia throughout different regimes. As the political and economic environment has changed, so has the physical structure of Woldia. The evolution of Woldia's urban spatial structure since the founding time can be divided into five periods: Pre-Italian occupation (1942-1974), the time of Italian occupation (1936-1941), the Haile Selassie regime after Italian occupation (1942-1974), the Derg period (1974-1991) and finally the post-Derg to the present period to present, and these are described chronologically in these periods in this chapter of this dissertation.

4.1.2.1 Woldia during the Pre-Italian Occupation

From the above, hence, it is possible to conclude that whatsoever the reasons were, the attachment of Ras Ali the great to the evolution and development of Woldia, in general, is a reality. The other most important fact is that though it is difficult to tell the exact year when Ras Ali the great founded Woldia, it is also possible to tell that the town was established sometime between 1784 and 1788. During this time, it is believed that the center of Woldia was set in today's Maksegno Gebeya at Deferge Kebele.

Throughout the early settlement in Woldia, having given an order to the people, Ras Ali divided the area into two sections: the early one hundred 'gebbars' (tax-payers) of Ras Ali who settled around Deferge-Islam Kebele and the fifty 'gebbars' (tax-payers) of Abba Dinsa hillock settlers. Totally, plots of land were given to one hundred and fifty 'gebbars' (tax-payers). This area was the place where the horses of the ruling circles were groomed and trained (Sarnessa, 1966, p. 20; Baye, 2009, p. 38). Yet, as far as their urban morphology, as well as housing typology, is concerned, the early settlements were more of a rural type.

Settlements grew by slow acceleration during the years following its foundations from tiny hamlets; its sizes were limited to Deferge-Islam Kebele and Abba Dinsa hillocks. The areas to the east, north, south and west of it were unoccupied. At that time, for example, the southern part of Adago or the area south of Mugad such as Melka Kole School was densely forested and was the shelter of hyenas and other animals, whereas the northern part was agricultural land. The eastern zone, known today as Debre Gelila, in the past as Lafto and Abba Maana, was partly farmland, marshy and forested areas. Debre Gelila of Woldia at that time has the shape of a standing man with his arms stretching forwards. The two arms represent the extensions of the town while the rest of the body indicates the area to the west of the sharp bend including the then road. The southeastern part of Debre Gelila which is known as Tinfaz is the narrow arm-like extension of the foot of Kore Mountain on the west. The area gently slopes in the southwest direction to Shelle stream.

Part of Itege Taitu Bitul school compound and the then mission land block (today's hospital area and the surroundings) were swampy and homes of mosquitoes. The Mission land block of Woldia at that time (Zonal specialize referral hospital of today) was a triangulated-shaped plot of land, separated from Adago by Aba Nigusse stream (now it dried up) and from Debre Gelila by Nitaf Dingay stream. The southern boundary was the confluence of these two streams, nowadays Woldia Health center.

The rest, that is all the plain areas, were farmlands except the valley between Ariro and Kore Mountain, which was densely forested with a path in the middle. That is, within the then boundary of Woldia, the only built-up areas were Deferge-Islam Kebele and Abba Dinsa hillocks, which the rest was unoccupied until the Italian occupations. It meant that Woldia remained stagnant in settlement expansion till the Italian occupation, even though there was a sign of growth during the reign Atse Yohannes and a very slight growth during the reign of Menelik II (Sarnessa, 1966).

It was during the time of Atse Yohannes that a taxation station was established at a place (today piazza), which was about three kilometers to the east of Woldia of the time, and directed the growth of the town eastward. However, as the taxation station was only a hut in which 'Negadras', equivalent to the present Mayor of a town worked during the day, it did not transform Woldia either in size or plan (Baye, 2009). However, with the expansion of the Ethiopian kingdom, during the reign of Menelik II, trade was promoted. For example, Woldia and Mekele, Merchants, took Amole (Salt Bars) as far as Addis Ababa, Jima, Nekemte, Gonder and Gojam. On their way back, they used to bring coffee from Jima and Nekemte, and butter, honey, hides and skins from Begemider and Gojam (Sarnessa, 1966). Consequently, Woldia became both a lodging place and a famous market. To meet the needs of traders, some drinking houses were set up.

4.1.2.2 Woldia during the Italian Occupation (1936-1941)

During the short-lived Italian occupation, Woldia was functioned mainly as a military garrison and as an administrative center. The Italian period was very important for its growth in a number of ways because it was during the Italian occupation that all-weather roads, different governmental institutions such as, the then Awraja Gizat, Awraja court, Awraja finance, Woreda court, Coptic offices, and what are now called Debre Gelila, Adago, and Mugad were built, and commercial business began on a large extent. The introduction of motorized transportation also stimulated commercial activities in and around Woldia, which in turn had its effect on the urban expansion of the town.

In fact, the first weather road was made when His Imperial Majesty Haile Selassie I passed to Maychew to fight the Italians. But all-weather roads joining Woldia to the Northern or Southern regions were constructed by the Italians. Soon after their arrival, the Italians made their fortress on the

top of KibbiKalu hill, just by the then west of Woldia. The physical growth of the town was also powered by the construction of the residence of the commanding officer at Aste Yalew, the then junction of the road from Woldia, and the path from Lafto or Mekerecha (taxation-station) in the east. After staying at Aste Yalew the residence of the officer was changed to Defergay which was within the then boundary of the town, Woldia. However, with the transfer and substitution of the officer, the new officer, Major Foglia, built his residence at Abba Manna by the Addis Ababa-Asmara road of that time. This, in turn, caused the physical expansion of the town eastward though this also marks the beginning of the limiting of the eastward growth of Woldia.

The governor of the day, Major Foglia, saw the improvements of urban networks as an important means of acquiring power over the town to play an important role as a stronghold in the area. The contribution of major Foglia was very important for the growth of Woldia in several ways because it was during the Italian occupation, during his rule, that an astonishing growth of a town had been observed than the growth of the town before. During this time, Woldia grew to about four times its previous size within five years, which previously remained stagnant almost for about one hundred and fifty years. That is why major Foglia was considered the founder of modern Woldia (Sarnessa, 1966). Interview with key informants confirms that the development of these gave impetus to the growth of Woldia, which attracted the construction of workers and later small service firms and domestic workers supporting the new suburb's middle-income class residents and government offices.

Moreover, the road constructed from Addis Ababa to Woldia and other places solved some of the transportation problems associated with the traditional method of trading to a greater extent and the town served as a break of the bulk center for distributing goods and services; it has long been a center of trade and commerce. What is has been established by Atse Yohannes, Foglia continued the Mekerecha (taxation station) as a controlling station or a place at which all goods passing by were examined. As a result, the place which had been as Lafto and later named as Mekerecha was named as *comnanda* Tabbaliterally means Command station. In addition to these, various facilities such as lodgings, drinking houses, restaurants, storehouses, garages, and many dwelling houses, clinics and offices were introduced and built during the time of Italian occupations (Sarnessa, 1966). The occupants were encouraged to purchase land at a lower price, to build houses and to live in the town.

To the west of Kore Mountain, a clinic and offices were built, which at football field and bakery was made at the area occupied by Itege Taitu Bitul School today. These were not the only things that Major Foglia contributed to Woldia. He marked out the boundaries of Woldia in 1938. It is his demarcation that was officially accepted and recognized by the government of that time. Also, the

Italians planned Woldia, built a school and clinics, and made running water available and caused the growth of the town.

Before the Italian occupation, selling ‘injera’ or milk was not the culture of the people. However, the first food or ‘injera’ selling was started when the armed forces began asking for food at a price. During the short period between the Italians’ evacuation of Ethiopia and the revival of peace and order in the country, many of the Italian built houses were destroyed. That is, as the Italians left the town, some of the people despoiled the houses and shared out the sheets of galvanized metal that made the roofs. It is because of this that Italian built houses are not found even in the 1960s at Debre Gelila (the then Abba Maana and Lafto) where the clinics, bakery and the residential houses were built (Sarnessa, 1966).

4.1.2.3 Woldia during Haile Selassie Regime after the Italian Occupation (1941-1974)

With the restoration of Ethiopia from the short Italian occupation, more people came into the town and more houses had been built. At the time of Italian occupation, houses were stood here and there, far apart. There was even part of Woldia which was not built up at all. As discussed above, Maksegno Gebeya, Abba Dinsa, and their surrounding areas were established before the Italian occupation. For instance, in the southern part of the town known as Tinfaz along the Addis Ababa-Dessie road, there were no houses. However, after the Italian occupation and their evacuations, houses have been built along with these directions following the main road within the boundary of the town at that time. Moreover, in the built-up areas, the houses are very close together, and in some places, they were even overcrowded. For example, part of Mugad and a small portion of Debre Gelila-the Piazza area are directly overcrowded. The number of houses was increased more than ten times of the evacuation of the Italian invasion.

The other major impetus factor for the slow but steady growth of Woldia was the introduction and built-up of public institutions after the Italian occupation. One of the major developments in the urban growth of Woldia during the post-Italian period was the introduction of municipal administration in the country. To this end, a municipality was established in Woldia in 1944. The municipality was not, however, strong enough to execute its responsibility because of the strong influence of the landowners. Prior to the nationalization of the land and houses by the Derg Regime, the land was purely under the control of feudal lords of the period and as a result, the municipality was not in a position to effectively administer the land that had under its municipal jurisdiction.

It was in 1947 that Kidane Mihiret Church was built within Commanda Tebba. It was at this time that Commanda Tebba was given a new name-Debre Gelila by Dejazmach Ayalew Biru (the then governor of Yeju Awraja). From that time onwards, the name Commanda Tebba was replaced

with Debre Gelila (Sarnessa, 1966). In addition to the earlier-built mosque in the old Woldia, two mosques-one in Mugad and the other in Debre Gelila were built after the time of the Italian occupation of Ethiopia. The then government clinic which was formerly called, mission hospital or Ras Wole Bitul hospital was also built after the Italian occupation by the then governor of (Yeju Awraja) the town named Dejazmach Ayalew Biru. Prior to the establishment of Itege Taitu Bitul School in 1948, a school named Prince Asfaw Wosen was opened in 1943 at Commanda Tebba and served the remains of Italian and sons of high government officials. Itege Taitu Bitul School was established even though the people were not willing to send their children to modern Schools.

Through time and much effort, the local people took the initiative and built eight classrooms for elementary School at Melka Kole, and a secondary school was opened in 1964. Yet, the problem of the shortage of classrooms was not solved. The first school of Woldia, Itege Taitu Bitul School, became secondary in 1964. To this end, Woldia is the second town, after Dessie, to have a secondary School in the Wollo Province of that time (Sarnessa, 1966). All these facts put together indicate the slow but steady growth of Woldia after the Italian occupation through establishing of these and other institutions.

However, during Haile Selassie's reign, the absence of attractive investment alternatives led persons in possession of surplus wealth to speculate in urban real estate. This pattern of investment drove up the cost of land in urban areas dramatically and led to a situation in which a small number of wealthy individuals possessed almost all urban land. An estimate made in 1966 indicated that five percent of the population of Addis Ababa owned 95 percent of the privately-owned land (Cohen & Koehn, 1977, p.25; Kebede & Jacob, 1985). To this end, Woldia was no exception to this situation. Hence, during the Imperial era, urban land was privately owned, and hence, if one wants to use an urban land without owing to it, he or she needs to lease it from the property owner. As it was true for Ethiopia, the land was owned by a few people whereas the majority of the people were landless.

Cohen and Koehn (1977) while writing on these issues state that an estimated 60 percent of the occupied housing units, in Addis Ababa, were rented rather than owned by their occupants in the late 1960s. The same pattern prevailed throughout Ethiopia, generating large incomes for a few urban landlords and landowners.

In the same vein, Sarnessa (1966) while writing on this line confirms that out of the total population of 9708 of Woldia, only 1329 were urban landowners while the remaining were landless in 1965. Hence, urban land was owned by few individuals who leased out the service to whosoever wants to make use of it. Few property owners owned urban houses and others, the majority had rented the dwelling houses or buildings or even lands from the property.

4.1.2.4 Woldia during the Derg Period (1974-1991)

After the overthrow of the Haile Selassie Regime in 1974, the radical reforms by the Derg (sometimes spelled as Dergue) had destroyed the private property ownership in the urban areas in the following periods (1974-1991). The Derg era or the socialist regime (1974-1991) nationalized urban lands and extra houses and had set a maximum threshold for private capital accumulation and investment (Cohen & Koehn, 1977).

As such there appears to be general agreement on the fact that Ethiopia claims to have nationalized all land and extinguished private freehold land ownership in 1975 under the "government ownership of urban lands and extra houses Proclamation No.47/1975. Hence, the property owner remained in his or her private house, and all the extra-urban houses had been nationalized in 1975. All industries, hotels, and buildings were also nationalized along with the rural land they have occupied in bulk. Accordingly, the government announced under its statement by saying that "land reform in urban areas" in order to "put an end to ... disparity in wealth, "urban land will have to be returned to 'the people in the same way that rural land was"(Cohen & Koehn, 1977; Holden & Yohannes, 2002). Cohen and Koehn (1977) write that:

To build public support for nationalization, the new military rulers disclosed the figures revealing that the extent to which private urban land ownership had become concentrated in the hands of the few in Ethiopia. For instance, on 25 July 1975, the Ethiopian Herald published statistics culled from incomplete municipal records revealing that seven members of Haile Selassie's family-owned eight million square meters of land in Addis Ababa, while the heirs of a powerful aristocrat claimed 12 million square meters in the Entoto and Yeka zones of the city. The extra houses and the extensive land the loyalists and their adherents were possessing in urban settings were doomed to be dealt [with] seriously. Accordingly, Derg formerly announced a proclamation to provide for government ownership of urban land and extra Urban Houses No. 47/1975. (p. 25).

Hence, all urban dwellers were allowed to own one house in any municipality in Ethiopia. Any individual was granted possessory rights over a maximum of 500 square meters of urban land in any one municipality, as living quarters. Nevertheless, free transfer of the same was prohibited. Similarly, sale, mortgaging, antichrists, succession, or otherwise was strictly prohibited except the right to pass the property on inheritance to one's spouse or children. Private-house owners and other organizations were prohibited to rent houses or buildings. Government buildings of the imperial regime were classified as 'enemy property' and were nationalized immediately. The proclamation strengthens state control over the physical development of urban areas. Moreover, it prevents

individuals and families from preserving or acquiring large urban holdings and, thereby, effectively eliminates gross inequities in land distribution (Cohen & Koehn, 1977).

The nationalization of urban land and extra houses halted private investment. This had repressed, among others, urban development. To that end, spatial and physical developments were mere responses to political demands. For its effective implementation and to tighten political control, throughout the Derg regime, new and decentralized administrative units like the ‘Kebele’ had been established. Woldia was no exception to the nationalization of privately owned property including urban housing-that nationalization of urban land was imminent.

The government was the only viable entity for the construction of facilities for urban services, public buildings and homes except for a few private investments for dwelling houses. The government started to offer land free of charge for government employees who produce evidence they do not possess any house previously (Tufa, 2008). However, the growth of the urban areas such as Woldia continued to stagnant. Four major reasons decelerated the growth of the urban areas: the political unrest, insecurity of urban life due to political conflicts, the nationalization of extra houses which halted the building of houses for rent and the strict control of in-migration to cities/towns through the registration of people's movements (Tufa, 2008).

Yet, one of the salient features of the Derg era was the nationalization of urban land and extra houses that gave municipalities the upper hand to manage their resources (land) freely and effectively. Evidence of this comes from the fact that the municipality of Woldia is reported to have provided land to its people for the first time in 1978 which incentives for the expansion of the town. During this period, Woldia expanded along the main road that runs between Addis Ababa and Asmara (as Eritrea was part of Ethiopia during that time). Moreover, the construction of the Woldia-Woreta road in the early 1980s had contributed to the stretching of the town’s development towards the northwest and west and reshaped the morphology of Woldia. Generally, the overall government policy of the Derg Period discouraged the urbanization process of all towns, and thus, Woldia also shares this fate.

4.1.2.5 Woldia during the Post Derg period (1991 to the present)

After EPRDF came to power in 1991 following the downfall of the Derg Regime, all land of any kind at all, occupied or unoccupied belongs to the state and was believed to be registered in the name of the people. To that end, since 1991, all land was officially declared as held by the state in the name of the people. The Constitution of the Federal Democratic Republic of Ethiopia Article 40 (which is about property rights) sub-article 3, it is provided that “the right to ownership of rural and urban land, as well as of all-natural resources, is exclusively vested in the State and the peoples of Ethiopia. The

land is a common property of the Nations, Nationalities, and Peoples of Ethiopia and shall not be subject to sale or other means of exchange. It is stated that all uses contrary to the constitution resulted punished by the law.

This is the time whereby Woldia has experienced rapid spatial expansion. In this regard, because of the Mountain barrier, except to the north and east, there experienced rapid expansion in all directions. Currently, Woldia has a different shape, mainly compacted, compared to the previous shapes. If one carefully looks at the shape of Woldia from the earlier period to the end of Derg, it takes an elongated/linear shape. That is, the east-west extent of Woldia was almost twice the north-south extent of it. This was because in those periods the growth and expansion of Woldia were following the main highways: Woldia Dessie-Addis Ababa, Woldia-Mekele, and Woldia-Bahir Dar-Gonder/Woreta roads.

Moreover, this is the period where modern buildings of multiple storeys have been built. Urban services also expanded rapidly, and as a result of which dwellers of the town and its environments enjoyed relatively better urban life. It is also the period of advanced progress of the town as compared to the former times. The explicit case of the pattern and trend of spatial growth of Woldia will be made later in this chapter.

Compared to earlier periods, Woldia becomes a multi-functional town, acting as a major center for administration, commercial, education, healthcare, and politics. Among others, the rapid expansion of the town is mainly fueled by the new economic opportunities and by the emergence of large scale government institutions such as the opening of Woldia University (founded in 2011), Woldia College of Teachers Education (founded in 2008/09), and the installation of multi-purpose of Sheik Mohammed Hussein Ali Al-Amoudi international stadium (come into action in 2017). Additional distant new rural areas such as the town's northwestern industrial extension close to Aba Chibsa and residential areas (in Gubo) were added in the fringe areas meant that further expansion of the town. The central area maintained the urban morphology developed by the Italians while the peripheral areas were impacted by urban sprawl/informal settlement).

4.1.3 Woldia's Population Growth and its Implications on Spatial Growth

Ethiopian towns are expanding at a rapid pace. Additionally, migration is contributing to their population growth. Due to migration, Woldia town has one of the nation's quickest rates of population increase. Woldia town had 11,325 migrants in 1994, up from 1,038 in 1984 (Miheretu, 2011). In recent years, the town has seen a sharp increase in the number of migrants residing in the town. According to the Woldia Woreda Health Department, the town's total urban population in 2020/21 was 89,707. Of these, 49, 887 people, or 55.61% of the total population, were migrants. This suggests

that migration is a fundamental factor in the town's present population growth. The establishment of Woldia University, Woldia College of Teacher Education, Woldia Polytechnic College, the Jeneto–Woldia highway, and the Woldia–Gondar–Bahir Dar highway are some examples of improved social amenities that are primarily to attract migrants. In addition, the town is a hub for industry; financial institutions and business investments have increasingly attracted and stimulated migrants to the town.

Woldia has consistently grown, from its establishment in 1778 to 1785, when its total population was 150 (Baye et al., 2020). The town was founded in the last quarter of the 18th century and has grown throughout the years, with 89,707 residents as of 2020/21.

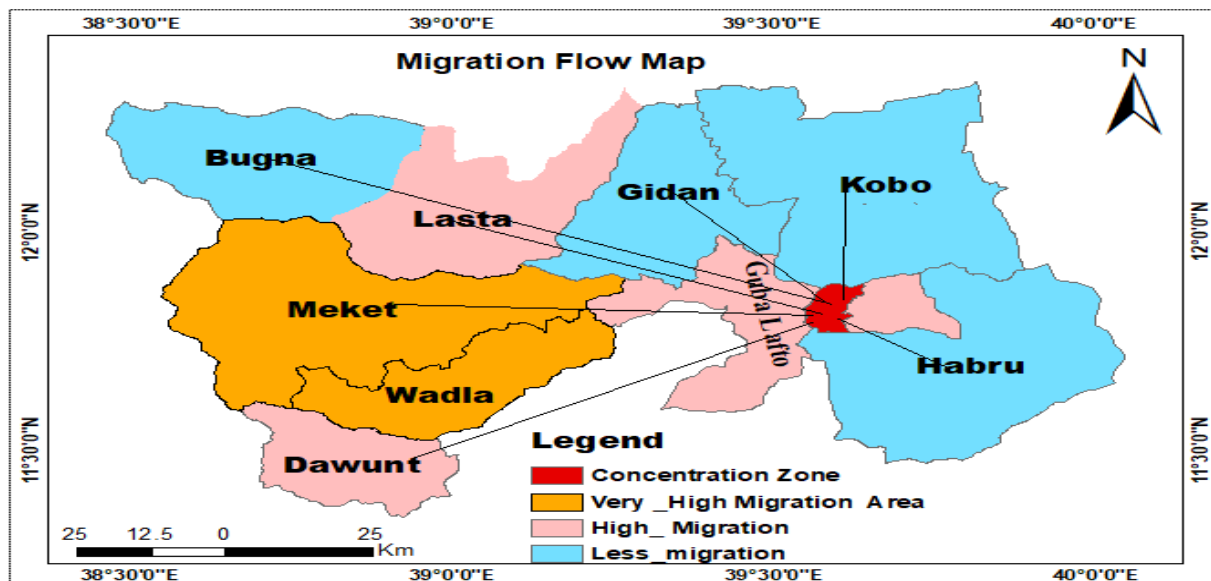


Figure 4.2. Migration flow Map of the surrounding Woredas of Woldia

(Source: Author, 2022)

According to estimates from Ethiopia's Central Statistical Authority (CSA), the urban population in Woldia grew at an annual rate of 4.11%, while the rural population grew at a pace of 2.23%. The town's total population was 46,126 in 2007, according to the CSA (2007), and 89,707 in 2020/21, based on data from the Woldia Woreda Health Department. This suggests that between 2007 and 2020/21, there was a significant amount of population pressure. Between 2007 and 2020/21, the town's population grew by 7.04% in a year. This implies that when the town's population increases, more space will be needed to handle the overabundance of residents. There is a substantial influx of migrants into the town from surrounding North Wollo zone highland and lowland Woredas (an administrative entity in Ethiopia higher than Kebele) as well as the nearby rural and urban kebeles (the smallest administrative unit in Ethiopia).

Fig.4.2 illustrates how individuals move from their areas of origin in this case, the several woredas to Woldia town (concentration zone). The North Wollo Zone Works and Social Affairs Office provided information that allowed for the division of the migrant flow into the town into three groups based on the economic and environmental conditions that the migrants faced. Meket and Wadla are among the Woredas with very-high migrant flow, while Dawunt, Gubalafto, and Lasta have high migrant flow, and Bugna, Gidan, Habru, and Kobo have low migrant flow.

In most cases, the flow of migrants' decreases as distance increases. This migration pattern is supported by Ravenstein's (1885) theory that migrants tend to dwell in large commercial and industrial centers and prefer shorter distances because of familiarity and accessibility; the number of migrants' declines as the distance increases.

However, **Fig. 4.2** migration flow map shows that a strong migrant flow is found far from Woldia town. The primary reason for this is the scarcity of agricultural land in certain woredas, which is severely impacted by drought. Distance is not as important to migrants as the quantity of socio-economic prospects in destination countries. This is consistent with Stouffer's (1940) assertion that the magnitude of migration is closely linked to the quantity of opportunities at both the origin and destination locations. More opportunities draw more people, making the location the destination. Therefore, migration increases with the size of the gap between the numbers of possibilities available in these two locations. However, Fig. 4.2 shows that the migratory flow is lower in Bugna, Gidan, Habru, and Kobo Woredas, which are nearer Woldia. This is because, in comparison to other woredas, certain woredas have comparatively better agricultural land, environmental conditions, and economic circumstances.

Table 4.9: Population size and absolute increase of Woldia town from 1967 to 2020

Year	Total population size	Absolute increase	Annual average growth rates (%)
1967	8505	-	-
1970	9409	904	3.5
1984	15,325	5916	4.5
1989	18,759	3,434	4.5
1992	22,786	4,027	7.2
1994	24,533	1,747	3.8
1999	31,203	6,670	5.4
2000	32,692	1,489	4.8
2002	37,365	4,673	7.1
2004	40,804	3,439	4.6
2007	46,126	5,322	4.3
2019	83,806	37,680	6.8
2020/21	89, 707	5,901	7.04

(Source: Computed from CSA annual abstracts (1984-2007) and Woldia Woreda Health Department, 2022)

As shown in **Table 4.9**, the town's population grew over time from 8505 in 1967 to 46,126 in 2007 with an average growth rate of 4.21%. This indicates that the town's population has increased by more than five times over the past 40 years (1967–2007). Additionally, the town's annual growth rate exceeded 3.5% between 1970 and 2020/21. The maximum growth rates for the town are 7.2% in 1992, 7.1% in 2002, 6.8% in 2019, and 7.04% in 2020/21.

The rapid population growth rate of the town became identified in the mind of the general public as the main cause of the rapid expansion of the town, and it was of course an important factor. But equally important was the unmet demand for housing, the prevailing town development practices of the town, and reclassification of land from rural to urban jurisdictions (Baye et al., 2020) In this regard, growing road traffic space, increasing social and commercial services, demands for open spaces for recreation, and future expansion and demand for lower building densities (due to high cost of storey building) resulted in the rapid growth of urban land use per inhabitant.

Table 4.10 The population growth rate matrix of Woldia (1967-2020)

Year	1970	1984	1989	1992	1994	1999	2000	2002	2004	2007	2019	2020
1967	3.37	3.46	3.60	3.94	3.93	4.06	4.08	4.23	4.24	4.23	4.40	4.45
1970		3.48	3.63	4.02	3.99	4.13	4.15	4.31	4.31	4.29	5.60	5.63
1984			4.04	4.96	4.70	4.74	4.73	4.95	4.89	4.79	6.79	6.79
1989				6.48	5.36	5.09	5.04	5.30	5.18	5.00	4.99	5.05
1992					3.69	4.49	4.51	4.94	4.85	4.70	7.66	7.61
1994						4.81	4.78	5.26	5.08	4.85	4.91	4.98
1999							4.6	6.00	5.36	4.88	4.94	5.03
2000								6.68	5.54	4.91	4.95	5.04
2002									4.40	4.21	4.75	4.86
2004										4.08	4.80	4.92
2007											4.97	5.11
2019												7.04

(Source: - Computed from statistical abstracts, 1967-2020)

As we can see from **Table 4.10**, the population growth rate of the town has been growing between 3.01% and 5.60% in the last four decades. Moreover as can be seen from the population growth rate matrix, except between 1965 and 1970, the population growth rate has never been below the minimum 3.01% observed between 1973 and 1984. In light of this, the population growth rate of Woldia had increased with annual growth rate figures above 4% from the base year, 1965. What the population growth rate of the town was 3.01% between 1973 and 1984 is found to be 4.06 % between 2014 and 2019. As the population growth rates of Woldia indicate the town will continue to grow in the foreseeable future.

Regarding the main drivers of migration, a key informant's interview of the mayors confirmed that the town has drawn a significant number of migrants from other small-sized towns and rural surrounding areas because of its administrative, economic, and geographic advantages over other urban centers in the zone. As of the 2019 population projection, Woldia was home to over 29.67% of all urban residents in North Wollo, while the zone's total urban population was estimated to be 282, 494. This demonstrates that the town's population is growing rapidly, necessitating more land to support various socio-economic developments. As a result, there is rapid horizontal development currently in the town brought by strong population pressure, which primarily resulted from migration.

The town has grown by engulfing the nearby peripheral areas of Adengure, Ariro, Mechare, Michael and Teklehaymanot.

4.1.4 The Primary Drivers of Migration and its Implication for Horizontal Spatial Growth

There are multiple factors that contribute to population movement. Migration to metropolitan areas, in particular, has more complicated causes. However, the causes of migration are commonly characterized as two major groups, namely “pushing” and “pulling” influences (Miheretu, 2011). For instance, poverty and other natural factors may force residents of a particular area to relocate to towns in search of work. However, people may also be drawn to other urban areas by better job opportunities or the need for better amenities there.

Economic, social, political, demographic, and environmental factors are all contributing to migration, which is the main cause of Africa's fast urbanization. For example, in some countries, almost 60% of the increase in urban regions is due to people moving from rural to urban areas in search of work (Teye, 2018). This is a result of the differences in rural and urban growth. According to Awumbila (2017), migration is a major factor in Africa's urbanization and growth since people move there in search of better social and economic opportunities as well as to avoid environmental degradation. It has long been a major source of both rural and urban communities' means of advancement and subsistence on the continent.

Furthermore, non-economic motivations like the desire to join family, the desire to be free from familial and cultural constraints, and so forth, may also have an impact on the decision to relocate. However, when it comes to the reasons for migration, researchers often come to the conclusion that people migrate in reaction to a number of economic and non-economic variables (Lewis, 1982; Todaro, 1997). The various drivers of migration and their implication for horizontal spatial growth is presented and discussed in the following section.

4.1.4.1 Push Factors as the main Drivers of Migration

Table 4.11 shows that the primary push drivers of migration. As a result, 26.55 percent of sample respondents said that people were compelled to migrate to Woldia town due to a lack of social facilities. From these percentage shares, 8.19, 11.17, and 7.20 percent are attributed to inadequate social facilities as primary, secondary, and tertiary push factors, respectively. Poor social amenities including health care and education are one of the pushing forces that draw people to move the town. This finding is consistent with Kassegn and Endris (2020), who pointed out that inadequate social infrastructure in rural areas, can lead to migration to urban areas, where there are more economic opportunities and better access to social services. This is the case in Woldia town at the moment, as migrants from nearby rural and urban kebeles migrate there in search of better social services that

they were denied back home. The opening of Woldia University, Woldia Comprehensive Hospital, and the town's numerous health stations all contributed to the migration.

In this regard, many scholars have identified a number of socio-economic challenges as the primary causes of migration. Urbański (2022) asserted that the absence of established healthcare systems affects people's desire to look for better healthcare elsewhere. Religious prejudice and a lack of educational opportunities are two other societal factors that contribute to migration.

Social factors like a lack of educational opportunities, employment opportunities, and affordable housing often push migration from low-social infrastructure areas to developed ones. According to Carbajal and Calvo (2021), the desire for a better quality of life is the social factor that drives migration. One societal concern that propels migration is the need for improved education for oneself and one's family.

Out of the entire sample of migrants, 23.82 percent of those surveyed said that the main reason migrants moved to Woldia town was poverty. It's common to think of poverty as a "push" factor that can make people more likely to migrate to better socioeconomic areas. This finding is consistent with Desalegn et al. (2023), who pointed out that migration is occasionally seen as a means of diversifying household income in situations when possibilities are limited or living circumstances are subpar. While some family members stay in the house and benefit from things like remittances, others migrate out to areas with better opportunities. This has also happened to several Ethiopian households in drought-prone areas.

The migration flow map shown in in **Fig. 4.2** and the data gathered from the North Wollo Zone Workers and Social Affair Office indicate that inward movement from rural woredas to the town occurred. Due to their low agricultural production and widespread drought, the nearby rural Woredas experienced this. As a result, there was food insecurity among the rural population. This result aligns with Clemens (2014), who pointed that rural poverty (such as land scarcity and low agricultural output) drives people to migrate to urban areas and migrants frequently relocate to urban areas in search of better wages even if such jobs are insecure. Furthermore, Balck et al. (2011) poverty is made worse by environmental degradation (droughts, floods), which drives vulnerable communities to relocate. In rural economies such as Bangladesh and sub-Saharan Africa, this is prevalent. In order to find work and a better life, they so choose to relocate to the town. At their place of origin, the geographical distribution of migrants exhibits both a Woreda variation and a rural-urban variation. They came from various administrative Woredas of the town's.

Government policies can play a significant role in creating push factors that drive people to migrate towards urban areas. As stated in **Table 4.11**, 16.87 percent of the respondents responded that

government policy can be considered as the driver of the push factor. In this regard, Gebremariam (2020) stated that urban growth initiatives implemented by the government, such as the Addis Ababa Master Plan, forced peri-urban farmers to relocate to the urban settlements. As result of displacement regulations, 80% of Addis Ababa's population would live in slums by 2020, accelerating the process of informal urbanization.

According to Angel et al. (2005), there are two policy arguments about whether urban growth should be restricted, permitted, or embraced. On the extreme end of the spectrum, there have been some who have sought to stop urban growth at all costs. Some, on the other hand, embraced it and made every effort to get urban areas ready to take in the incoming floods of new migrants.

The local administration of Woldia has implemented the welcome policies which were previously discussed to revitalize the center parts of the town. People who had previously resided in the town center were consequently moved as intra-migrants to the town's outskirts, which further contribute to the town's horizontal spatial growth by creating a need for space.

Food shortages and subpar living circumstances brought on by a lack of land can drive people to migrate. Accordingly, a number of studies carried out in Ethiopia's north, south, and northwest have shown that a lack of land is one of the drivers of rural residents' migration to cities. According to research conducted in different parts of Northern Ethiopia, Zeleke et al. (2008) and Asfaw et al. (2010) claimed that a lack of suitable means of subsistence, landlessness, and a shortage of farmland are some of the primary reasons for rural outmigration. Recently, the nearby rural Woldia woredas have encountered the same situation. According to the survey results in **Table 4.11** and the migration flow diagram in **Fig.4.2**, 10.67 percent of respondents believed that a lack of land was one of the main reasons why migrants chose to relocate to the town. This is because most of the woredas around the town are affected by land scarcity.

Another study conducted in southern Ethiopia brought to light how the lack of access to agricultural land is discouraging young people in rural areas from pursuing careers in agriculture (Bezu & Holden, 2014). Research in numerous rural areas in north-west Ethiopia indicates that the primary drivers of rural out-migration are landlessness or insufficient land (Tegegne & Penker, 2016).

The rural-urban wage difference is the other factors that drive people to move to urban areas. In line with this, Harris and Todaro (1970) asserted in their economic model that rural-urban wage differences encourage migration, even when urban unemployment persists. Migrants assess the possibility of getting higher-paying urban jobs against rural income. As depicted in **Table 4.11**, the survey result indicated that 9.18 percent of the respondents responded that rural-urban wage differences at the place of origin and destination is driving people to migrate to the town. In this

regard, Gollin et al. (2016) found that in sub-Saharan Africa, urban earnings are 50–100% greater than rural incomes; yet, obstacles such as high urban living expenses and poor job development cause urbanization rates to lag. According to Lagakos (2020), a global meta-analysis shows that migration rates increase by 2–3% for every 10% increase in the rural-urban wage differences. Moreover, Fields (2005) stated that in Latin America, the formal sector pays more in urban areas than in rural areas, yet migrants frequently find themselves working in low-wage informal employment (such as street hawking in Lima or Bogotá). Therefore, the disparity in income between the places of origin and destination has been a significant push-pull element when it comes to pay concerns, namely the expectation of greater earnings for migrants in the town.

Table 4.11. Response on push factors as drivers of migration

Push Factors	Categories of Push Factors						Total	%
	Primary		Secondary		Tertiary			
	Frequency	%	Frequency	%	Frequency	%		
Poverty	51	12.66	23	5.71	22	5.46	96	23.82
Land shortage	13	3.23	19	4.71	11	2.73	43	10.67
Poor facilities	33	8.19	45	11.17	29	7.20	107	26.55
Natural disasters	0	0	2	0.50	0	0	2	1.24
Man-made disasters	0	0	0	0	0	0	0	0
Job transfer	27	6.70	6	1.49	2	0.50	35	8.68
Government policy	41	10.17	15	3.7	12	2.98	68	16.87
Bad culture	2	0.50	5	1.24	2	0.50	9	2.23
wage gap	5	1.24	18	4.47	14	3.47	37	9.18
Bad governance	0	0	1	0.25	5	1.24	6	1.49
Total	172	42.68	134	33.25	97	24.07	403**	100%

** (Note: the multiple responses of the respondents which exceed the sample size)

(Source: Field Survey, 2021)

In this study, **primary push factors** refer to the main causes which forces people to migrate from their area of origin to their destination. **Secondary push factors** refer to the second driving cause for people's migration from their home area to their destination. **Tertiary push factors** refer less driving forces for people's migration from their home area to their new location.

4.1.4.2 Pull Factors as the main Drivers of Migration

Table 4.12 depicts that the majority of respondents (28.45%) replied that improved social amenities in the town were considered as the main pull factors. According to Kassegn and Endris (2020), improved social amenities such as public services, healthcare, and education, along with the ensuing change in attitudes and values, can be viewed as pull factors that encourage people to relocate to a certain region.

Furthermore, the results of key informant interviews with the town's mayors, North Wollo Zone Workers, and Social Affair Offices and kebele managers also verified that the provision of better social services was a major driver of inward migration to the town, which in turn fueled the ongoing urban population growth. The town has had fast horizontal growth due to the migration of citizens from adjacent rural and urban areas, which is a result of their enormous demands for basic infrastructural services.

The primary "pulling" factors behind the migration of significant populations from rural to urban areas are the relative improvement of various services and better living conditions in urban areas as compared to rural areas. In this regard, Huang and Clark (2002) found that China's 1990s urban housing reforms brought affordable housing markets to Beijing and Shanghai drawing in migrants from the rural area that were looking for improved living conditions. To this end, migration to urban areas led to a boom in the urban population, which in turn raised demand for housing and other infrastructure, among other social amenities, in destination areas. As a result, the growing population's demand for urban land on the outskirts also contributed to the town's spatial growth. This is currently the case in Woldia town, where migrants from neighboring urban woredas and small rural towns come to seek easier access to social services. The migration to the town was influenced by the establishment of Woldia University, Woldia Teacher Education College, Woldia Comprehensive Hospital, and a large number of health stations.

One typical pull factor that may entice migrants to relocate to an area of destination is employment possibilities. **Table 4.12** shows that 19.30 percent of the sample migrants who were surveyed said that individuals migrate to the town because of job prospects in destination places. According to Zoelle (2011), economic factors that draw migrants include things like the prospect of better employment, better housing, more money and food, and higher living standards. Migration helps receiving areas meet their labor demands, diversify their economies, and increase household income in addition to bringing back skills.

Table 4.12 shows that 11.15 and 6.49 percent of sample respondents said that the town's better communication hub, business district, and information availability, respectively, drew migrants

to the area. The concentration of different industries at the Michael site and Woldia's nodal status for communication, transportation, and commerce drew the majority of migrants. Accordingly, the economic benefits of agglomeration economies, such as cost reductions and job possibilities, are the primary drivers of migrants' relocation to metropolitan areas (Fu and Gabriel, 2012). Additionally, Tiffen (1995) stated that the benefits of migration include the inflow of information and cash, as well as investments in transportation and provisioning, all of which can increase the profitability of agriculture. Economic benefit has often been the primary driver of human migration. The economic gain that migrants from urban regions receive is a substantial asset that might be passed to rural areas (home area or village) in the form of capital, technology, learning awareness, knowledge, trade, commodities or services, etc.

Moving to a place with a better climate, beautiful scenery, less risk of flooding, and fewer natural disasters could be regarded as an environmental pull factor. A better environment can include things like neighborly behavior, the availability of cultural and recreational resources, and more. A favorable environment is one of the pull factors that must be understood in order to predict population migrations and plan for the future. In light of this, Black et al. (2013) found that due to their more stable temperatures and improved flood defenses, rural Bangladeshi residents moved from Dhaka to secondary cities like Khulna and Rajshahi after droughts

A close look at **Table 4.12** depicted that 10.65 percent of the sample respondents responded that the good urban environment of the town attracted migrants to settle there. Conducive climate is one of the basic elements of the urban environment which drives people to migrate. In this regard, Henderson et al. (2017) pointed out that urban areas with consistent good climate, rainfall and fertile soils, like Nairobi and Addis Ababa, draw migrants from rural areas because of their booming agricultural markets, which fuel the expansion of urban jobs.

Migration is also influenced by social pull. **Table 4.12** shows that 7.32 and 6.66 percent of respondents replied that marriage and the presence of friends and family were the catalysts for their migration respectively. Social attachment can encourage migration, such as having family, friends, and relations in the destination places. Given this, Wondimagegnhu and Zeleke (2017) claimed that prior to migration; migrants had some prior knowledge and connections regarding the target region. Rural out-migration is more likely when people have access to information and systems. Once at their destination, migrants frequently rely on networks, particularly for food, lodging, and language and cultural guidance (de Brauw and Carletto, 2012). By providing access to job information, strong ties to the destination community can promote migration. As a result, social factors at the destination location contributed to migration in their own way.

In this study, **primary pull factors** refer to the main causes which forces people to migrate from their area of origin to their destination. **Secondary pull factors** refer to the second driving cause for people's migration from their home area to their destination. **Tertiary pull factors** refer less driving forces for people's migration from their home area to their new location.

From the discussion so far, we can pointed out that the interaction of push factors—the circumstances that force people to leave their places of origin and pull factors—the possibilities that draw them to their destinations drives the complicated phenomena of migration. Horizontal spatial growth, or the actual outward extension of urban and peri-urban areas, is shaped by these influences and frequently results in socio-spatial inequality, unplanned sprawl, and environmental deterioration.

Additionally, the survey's findings are more or less in line with empirical research conducted in Wolaita Sodo town, Ethiopia, by Delango (2019), who also found that the interaction of push and pull factors at the points of origin and destination encourages migration; Teshome and Belete (2017) in Dire Dawa City found that the main drivers influencing migration are economic, political, demographic, environmental, and social drivers; and Torun et al. (2002) in Guatemalan found that the interaction of "Push and Pull" factors at the points of origin and destination encourage migration.

Table 12 Response on pull factors as drivers of migration

Pull Factors	Categories of Pull Factors						Total	%
	Primary		Secondary		Tertiary			
	Frequency	%	Frequency	%	Frequency	%		
Good environment	29	4.83	14	2.33	21	3.49	64	10.65
Job opportunities	57	9.84	33	5.49	26	4.33	116	19.30
Marriage	7	1.16	7	1.16	30	4.99	44	7.32
Better information	8	1.33	34	5.66	25	4.16	67	11.15
Change new places	2	0.33	13	2.16	9	1.50	24	3.99
Presence of relatives	15	2.50	12	1.10	13	2.16	40	6.66
Better social services	80	13.31	64	10.65	27	4.49	171	28.45
Good governance	2	0.33	3	0.50	9	1.50	14	2.33
Peace	2	0.33	6	1.00	14	2.33	22	3.66
Center of business	11	1.83	17	2.83	11	1.83	39	6.49
Total	213	35.44	203	33.78	185	30.78	601**	100

** (Note: the multiple responses of the respondents which exceed the sample size)

(Source: Field Survey, 2021)

4.1.5 The Pattern and Rate of Spatial Growth of Woldia 1965-2020

After clearly identifying the primary causes of migration and analyzing demographic trends and their implications for the town's spatial growth, it is important to briefly discuss the town's physical expansion (pattern) and trend (growing rate). Woldia has not undergone extraordinary development and transformation since its establishment; the town's spatial expansion has essentially stalled since the 1980s, when it went through a development phase, and because of the dispersion of low-density single-family homes, the urban area of the town of Woldia has not grown spatially since then.

Table 4.13 shows Woldia's urban land area in hectares, the amount of rural land seized, the percentage and rate of increase, and the town's average annual rate of growth from 1965 to 2020. As shown in **Table 4.13**, the town's spatial growth rate from 1965 to 2007 was 23.58% per year. One of the effects of the town's horizontal spatial growth to the rural periphery in 2007 was the town's encroachment on 556 hectares (ha) of land. This was due to the town losing valuable rural farmland to urban areas in order to provide various urban services for its expanding population, which was caused by migration and natural growth.

It is evident that urban ward migration, which is caused by the interaction of push and pull factors, is unavoidable; the influx of people has put enormous demands on the town's urban land. The results of the interview conducted with the town's municipal manager and urban land administration office showed that, despite the high demand for urban land brought on by the town's expanding population, the administration was unable to meet the demand, and as a result, the supply fell short of the needs. The government is therefore advised to offer urban space for the construction of housing stock on the periphery in order to accommodate these large influxes of people, which ultimately results in the town's formal and informal spatial growth.

The resurfacing of the roads (from Piazza to Gonder Ber and from Gonder Ber to Itege Taitu Bitul Primary Full Cycle School via Mugad and Adago) and the town's increasing importance as an administrative center have contributed to the town's growth and encroachment into the rural hinterland beyond the established urban boundaries, in addition to the issues brought on by the fast urban population growth (Baye, 2009). The town's physical development from 1965 to 2020 is shown in **Table 4.13**.

Table 4.13 Urban area of Woldia in hectares from the Year 1965 to 2020

Year	Urban area in Hectares	Absolute Increase	Rate of change in Percent
1965	51	-	-
1986	142	91	178
1992	343	201	141
1994	355	12	3.5
2007	566	211	59.4
2009	694	138	25
2018	2001	1307	188
2019	2103	102	5.1
2020	2213	110	5.2

(Source: Aerial photo (1965 &1986), CSA (1994), and Municipality of the town, 2022)

As we can see from **Table 4.13**, town's total area over the preceding 21 years was 51 hectares in 1965 and 142 hectares in 1986. From 1965 to 1986, infill growth was the most common. For 1986 and 2018, the percentage change rates were particularly high, reaching 178% and 188%, respectively. Urban uses encroached into 211 hectares of agricultural hinterland between 1994 and 2007, at a rate of 16.23 hectares in a year. Adengure, Ariro, Mecharie, Michael, and Teklehaymanot were among the locations that were incorporated into the town's built-up area between 1992 and 2007. According to this, the settlement is expanding horizontally at a startling rate in a relatively short amount of time.

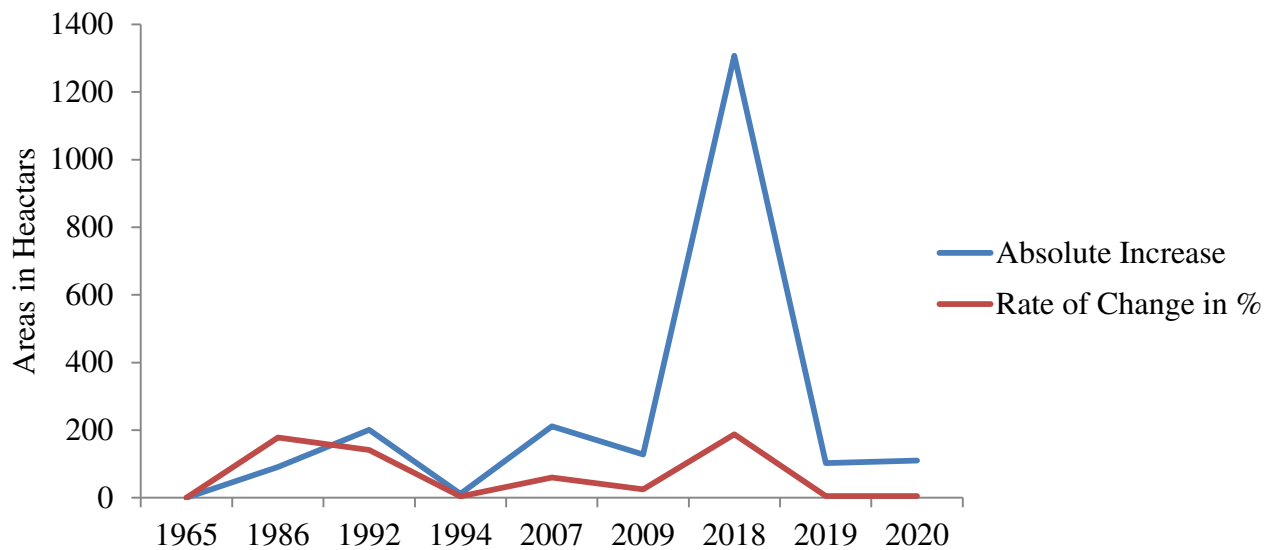


Figure 4.3 Urban Areas of Woldia in Hectares from the Year 1965 to 2020

(Source: Developed by author, 2021)

Fig.4.3 shows how this outward expansion and the ensuing invasion of rural land (both built-up and soon-to-be-built-up open spaces) devoured 2213 hectares of the surrounding areas, including agricultural fields, in just 55 years. This indicates that the urban growth rate was 77.1% year from 1965 to 2020. There are detrimental impacts on the periphery in any area where there has been spatial growth, especially when it comes to the eviction of farmers from their farms (loss of farmland), deforestation and ecosystem loss, pollution of the water and air, environmental or land degradation, waste generation, conflicts, and increased expenses for infrastructure and services.

This is because, as a nation's population increases due to migration or the rate of natural growth, urban districts expand geographically to the outskirts to accommodate more people. Horizontal growth is largely accomplished by absorbing the rural hinterland, mainly agricultural property close to the town, and converting grazing area into urban uses, as opposed to vertical growth, which maximizes the amount of land available. Because building high houses and stairs is so costly and out of reach for most town inhabitants, the town's vertical growth has been highly constrained.

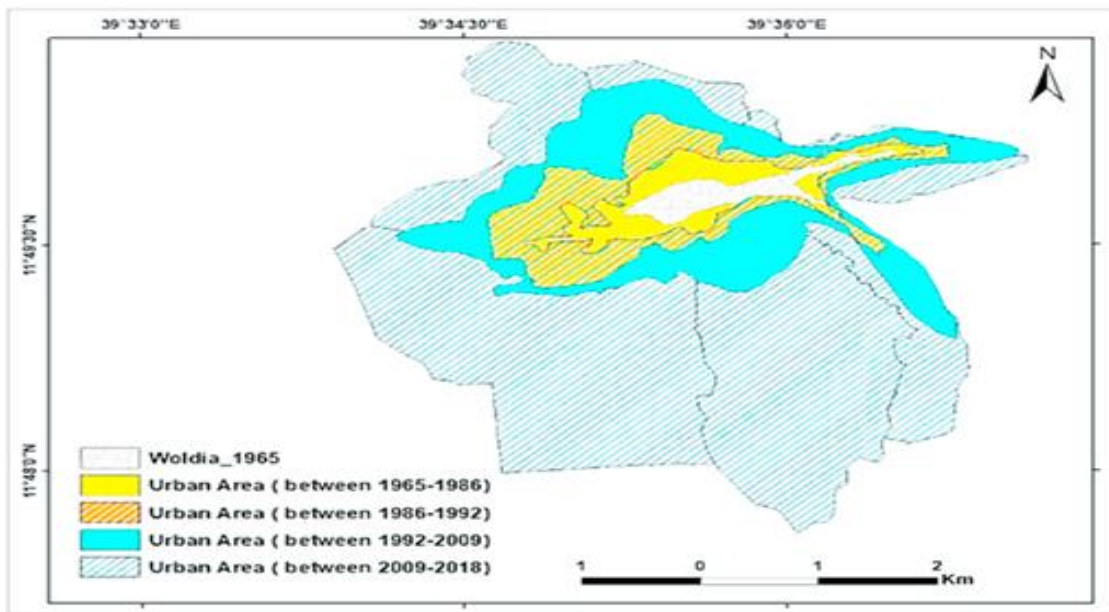


Figure 4.4. The spatial growth trends of Woldia (1965-2020)

(Source: adopt from Baye et al, 2023, P: 6)

Initially, Woldia town, one of Ethiopia's fastest-growing urban districts, expanded in a linear manner outward following the main roadways (see **Fig. 4.4** for the town's shape until 1992). The town's current growth is mostly concentrated in the north, south, west, and south-west hillside directions, despite the fact that its spatial expansion is not consistently significant in all directions. However, the physical barriers of Mount Gabriel and Gubarja/Kore, respectively, restrict the towns' southern and northeastern geographic expansion.

Prime agricultural fields in Adengure, Ariro, Mechare, Michael, and Teklehaymanot, among other regions incorporated by the town between 1992 and 2020, have been lost as a result of the town's growth in the north-west and south-west, which is predominantly residential in character. The town is primarily left for industrial use as it expands westward along the Woldia-Gondar-Bahir Dar highway. Over the course of its history, the town has seen both population pressure and amazing spatial growth. Following the highways, the surrounding built-up region expands into the neighboring rural areas, which are connected to other towns around the nation by three radial routes.

As shown in **Fig. 4.4**, three main routes will be used for Woldia's current and future urban growth,: the first is oriented toward the north-west and leads to Adengure, passing through parts of the Ariro region; the second is oriented toward the west and follows the ups and downs of the Woldia-Woreta road; and the third is oriented toward the south, southeast, and southwest.



Figure 4.5 Horizontal spatial growth of Woldia at Mechare and Michael sites

(Source: Field survey, 2021)

Direct personal observation is the key tool to visualize and understand spatially the physical growth of the town. As **Fig. 4.5** illustrates, various socio-economic developments are also enhancing the town's spatial growth due to the population growth that demands space for infrastructure such as roads, residential, commercial, industrial, recreational (Woldia stadium), and institutional (Millennium School). To ensure the effect of various developments on the town's peri-urban areas, which are driven by migration, the researcher conducted personal observation and interacted with the study sites.

Accordingly, an empirical study on the "impact of land acquisition for cooperative housing development in Woldia town from 2004 to 2024" by Sefiw (2024) revealed that built-up areas increased significantly from 11.35% to 49.62%, while farmland decreased from 19.27% to 6%, forest cover from 24.95% to 13.98%, and bare land from 18.84% to 2.37%. This suggests that infrastructure-related housing and road expansion fueled rapid spatial growth, while habitat quality decreased from 0.79 in 2014 to 0.63 in 2024 as a result of urbanization and population growth.

Furthermore, a study on "administrative failures contributing to informal settlements in Woldia" by Baye et al. (2023) also noted that infrastructure-driven urban expansion is directly

responsible for the conversion of peri-urban agricultural lands to non-agricultural use, disregarding rural land laws.

According to urban land experts interviewed, this conversion has been a source of concern, pointing to difficulties in managing spatial growth, meaning that as the town's population increases and the demand for functional complexity increases, more and more space will be needed to meet the needs of residents as well as the town's excess population. The town's urban area is expanded to the nearby hinterlands due to encroachment on rural agricultural areas, and the town's urban growth is primarily a recent phenomenon that has been widely observed since the end of the 20th century, as the town's geographic growth map demonstrates.

Table 4.14 Key empirical studies on socio-economic development and spatial growth of Woldia

Topic	Key findings	Sources
Infrastructure and structural transformation: evidence from Ethiopia	Road access boosts employment in services by 19.2%, while large push infrastructure boosts welfare by 11%.	Moneke (2020).
Exploring the nexus of migration dynamics and urban expansion in Woldia	Highways and universities encourage migration, which fuels urban growth and increases the population from 8,505 to 89,707.	Fasigo et al (2025)
Impact of land acquisition for cooperative housing in Woldia, 2004-2024	Built-up grew from 11.35% to 49.62%, while agriculture fell from 19.27% to 6%.	Sefiw (2024)
Administrative failures contributing to informal settlements in Woldia	Peri-urban agricultural land was transformed into urban usage, resulting in the formation of informal settlements	Baye et al (2023)

(Source: Author's own development, 2024)

Based on the discussion so far, we can say that socio-eco development, including infrastructure services, is a key component of Ethiopia's spatial growth and has a big influence on employment and land use trends. In Woldia, certain projects, such as highways and universities, stimulate urbanization and migration, resulting in a rapid growth of built-up areas and difficulties with land use conversion. These results highlight the necessity of integrated urban planning for sustainable spatial growth management, especially in towns like Woldia that are urbanizing quickly.

4.1.6 Effects of Migration on Woldia’s Growth and Surrounding Migrant Sending Areas

There are many different impacts of migration on both sending and receiving areas. Migration has both positive and negative effects on sending and receiving areas in Ethiopia in general, and Woldia in particular, despite the fact that the underlying causes of migration vary globally at the areas of origin and destination. It has a positive effect on the socio-economic development of sending places through remittances, lower unemployment, stronger local economies, and reduction of the burden on natural resources due to low population. Migration also helps destination areas by increasing the labor supply, fostering cultural variety and cohesion, closing the skills gap, and boosting the local economy (Habtamu, 2015).

Conversely, labor shortages, decreased productivity, family separation, and rural depopulation have a detrimental impact on the socio-economic development of sending communities. In migrant receiving areas, migration is frequently held responsible for falling living standards, increased population pressure, increased land demand, and pressure on social facilities (Habtamu, 2015).

The effects of migration on both the origin and destination of medium and small sized urban areas are not well understood, despite the aforementioned conditions that are now in place. It appears that not much empirical research has been done on demographic, economic and social effects of migration in medium size destination area of Woldia and small size nearby sending urban areas. Hence, the major findings and discussions align with empirical studies are presented in the following sections.

Effects of Migration at Place of Origin

Migration has both beneficial and detrimental effects on the place of origin. In light of this, information about the positive and negative impacts of migration at the place of origin was collected. According to the surveyed data, there are positive and negatives effects of migration at the place of origin.

Table 4.15. Respondents’ response on impacts of migration at place of origin (positive or negative)

Responses	Frequency	Percentage
Yes	210	53.16
No	185	46.84
Total	395	100%

(Source: Field Survey, 2021)

Respondents were asked if they believed that migration affected their places of origin. As shown in **Table 4.16**, out of the 395 sample respondents, 210 respondents, or more than half

(53.16%), said that migration had a beneficial effect on sending areas, while 185 respondents (46.84%) said that migration had a negative effect. The study sheds light on a number of socioeconomic and demographic factors while offering insights into the complex effects of migration on both the areas of origin and the destination.

Positive Effects of Migration at Place of Origin

The positive effects of migration include remittances and economic benefits to sending areas. The primary driver of migration has often been economic gain, and the money that urban inhabitants make from their relocation may be a useful asset for them to return to their hometowns.

As shown in Fig. 4.6, 210 out of the 395 sample respondents said that migration had a favorable effect. Of the 210 respondents who gave a positive response, 87 (41.43%) stated that migration increased the flow of remittances, while 48 (22.86%), 29 (13.81%), 26 (12.38%), and 20 (9.52%) said the same. This indicates that migration reduced unemployment, boosted the local economy, lessened the strain on social services in sending areas, and decreased the depletion of natural resources.

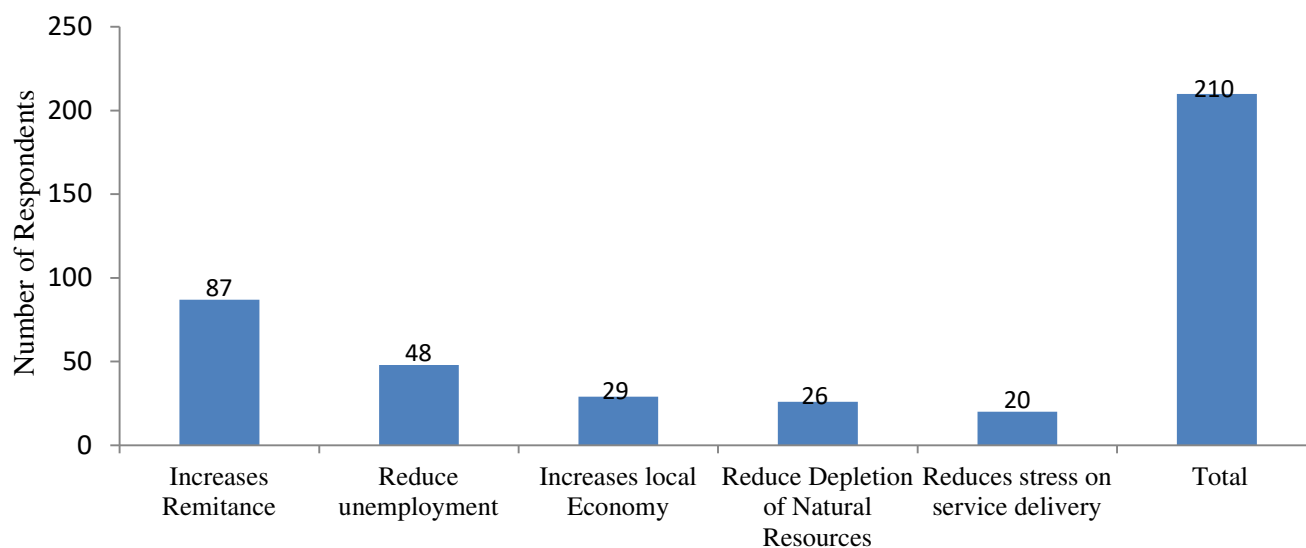


Figure 4.6 The Positive Effects of Migration at Place of Origin

(Source: Field Survey, 2021)

The survey's findings indicate that migration boosts the local economy and a remittance, which helps households stay financially stable and protects them from outside shocks. This result is in line with the findings of Hagen-Zanker (2015), who claimed that migration and migrant remittances assist rural farmers in developing countries in lowering risk and overcoming financial obstacles, allowing them to more easily embrace farming innovations. Additionally, Wondimagegnhu

(2012) found that remittances from migration raise capital stock, especially in households who send short-term migrants as opposed to those that do not send migrants.

By bringing skills and knowledge back to their home regions, migrants also help to slow down the depletion of natural resources. According to Obani and Odalonu (2023), migration entails the transfer of knowledge, skills, and financial assets (including remittances) for the benefit of the individual family, home, community, economy, and overall development.

Empirical research shows that remittances significantly improve farm income and asset accumulation in communities of origin in Ethiopia. A study by Adugna (2018b) using household survey data from seven northern Ethiopian communities found that remittances from permanent migrants raise crop income. Their contribution to increasing agricultural production is demonstrated by the fact that a 1% rise in remittances results in a 193.0 ETB (Ethiopian Birr) gain in crop income. Another study by Tesfaye and Bauer (2015) which focused on Southern Ethiopia used two-step estimations to quantify the effect of out-migration and discovered that remittances increase farm revenue for migrant-sending families. This lends credence to the idea that, especially in rural regions, remittances act as a means of income diversification and survival.

Negative Effects of Migration at Place of Origin

At the place of origin, migration has a detrimental effect. Some of the negative effects of migration on the sending areas include decreased agricultural output, decreased family ties, decreased labor force participation, and other associated factors. According to the survey's findings about respondents' age, sex, and place of birth, the majority of respondents were male, from a rural area, and fell into the young and adult age range. This could have a substantial effect on the distribution of the labor force and agricultural output in sending areas. Out of the 395 respondents in the sample, 185 said that migration had a negative effect. The respondents who gave negative answers are displayed in **Fig. 4.7** along with the results that followed.

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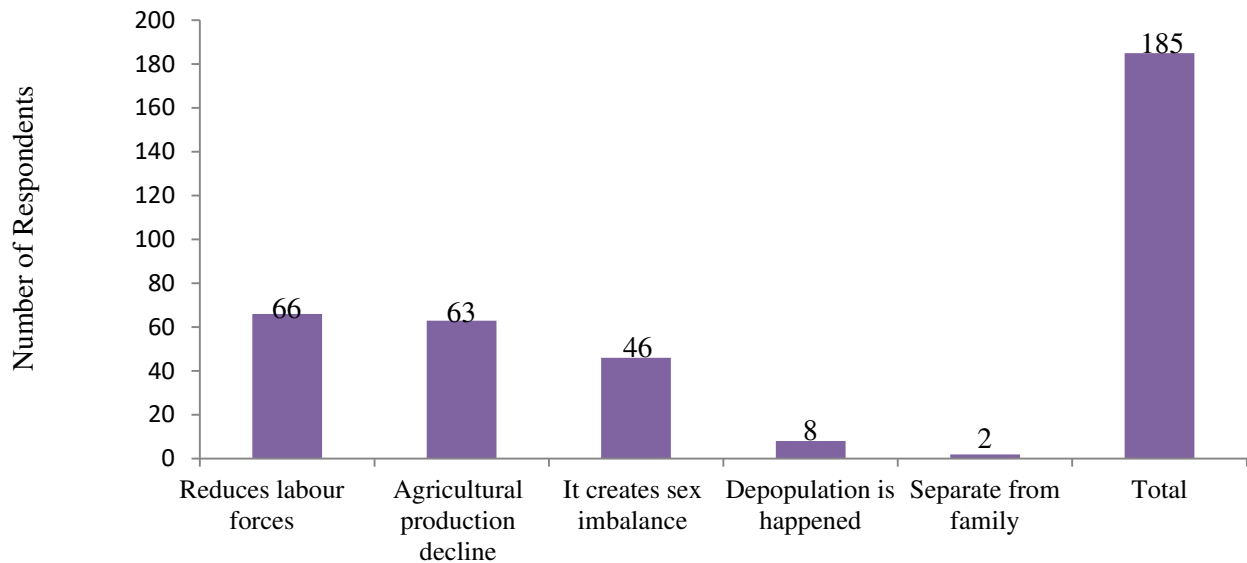


Figure 4.7. The Negative Effects of Migration at Place of Origin

(Source: Field Survey, 2021)

According to **Fig. 4.7**, of the 185 respondents who selected "Negative effects of migration," the majority 66 (35.68%) and 63 (34.05%) said that migration reduced agricultural output and labor force participation in the sending areas. Sex imbalance, depopulation, and family separation were cited by the remaining 46 (24.86%), 8 (4.32%), and 2 (1.10%) of them, respectively.

Migration lowers the origin country's agricultural output and human capital, as the study's findings showed. According to Eshetu et al. (2023), rural out-migration lowers agricultural productivity and human capital in the areas of origin, which has a detrimental impact on the welfare of the sending households (loss of labor force). This conclusion is consistent with their findings.

Furthermore, Ketema and Diriba (2021) stated that young individuals working in labor-intensive jobs in rural areas who migrate away from their parents can negatively impact their family's well-being and slow down the local economy. Accordingly, Mueller et al. (2020) found that a preponderance of male migrants from the place of origin can cause female heads and other family members to take up more labor in sending areas, which has a negative impact on agricultural output and forces female heads to put in more hours on the farm.

The results of the survey also indicate that migration has a detrimental impact on rural depopulation and population imbalance. According to Poston and Bouvier (2010) and Ketema and Diriba (2021), those who migrate to urban regions are typically of early childbearing age, which is likely to lower the population's reproductive potential and the rural depopulation at origin.

Effects of Migration at place of Destination

This study has also looked at the positive and negative of migration for the place where migrants settle. Data was collected from 395 sample respondents to identify the main impacts of migration, which are shown in **Table 4.16**.

Table 4.16. Respondents' response on impacts of migration at place of destination (positive or negative)

Responses	Frequency	Percentage
Yes	283	71.65
No	112	28.35
Total	395	100%

(Source: Field Survey, 2021)

Table 4.16 shows that 283 respondents (71.65%) responded that migration had positive effects on destination areas, while 112 respondents (28.35%) responded that migration had negative consequences.

Positive Effects of Migration at Place of Destination

As **Fig. 4.8** illustrates, the survey's findings suggest that migration benefits the destination area by increasing the labor supply, cultural diversity, skill shortages, local economy, and government revenue. 110 (38.87%) and 83 (29.33%) of the 283 respondents who said that migration had a positive effect reported that it increased the labor supply, cultural diversity, and cohesiveness, respectively. The remaining 45 (15.90%), 42 (14.84%), and 3 (1.06%) respondents said that migration improved local government revenue, skills, and the economy.

Based on the survey results, we may conclude that migration had a major role in the socio-economic development of the town by supplying workers. This result is in line with the findings of McAuliffe and Oucho (2024) and Berisso (2023), who claimed that migration, benefited the economy by providing workers. According to their research, migration is good for the local economy since it stimulates the labor force in the destination locations, which in turn increases employment and output. Additionally, key informant interviews with North Wollo Zone Labour and Social Affairs office professionals from the town administration verified that the labor force was positively impacted by migration from nearby areas and small towns at the origin. This makes it possible for them to work in the town's labor-intensive economic sectors.

According to the results of key informant interviews with the town's labor and social affairs experts, migration enhanced social contact and the destination area's social capital through the blending of religion, marriage language, and culture. In keeping with this, Bauloz et al. (2019) noted

that migrants moving, whether temporarily or permanently, may need to adjust to a new language, customs, social norms, and culture. The extent to which migrants are progressively assimilated into their new community will also depend on the attitudes of the receiving communities, especially how receptive they are to migration and migrants. These results also support those of Guriev and Papaioannou (2022), Rodrik (2021), and Norris and Inglehart (2019).

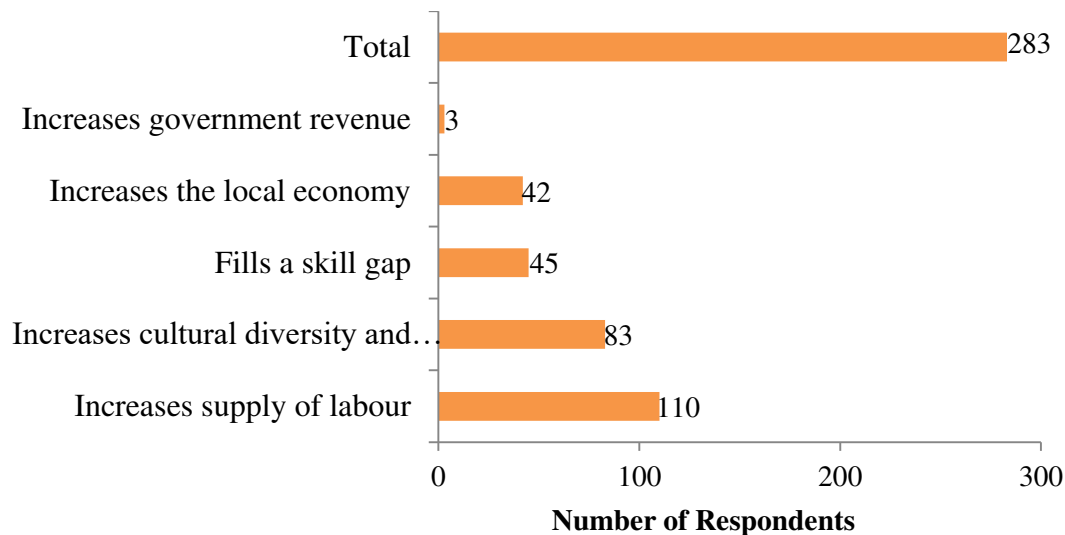


Figure 4.8. The Positive Effects of Migration at Place of Destination

(Source: Field Survey, 2021)

Negative Impacts of Migration at Place of Destination

Fig. 4.9, 112 out of 395 sample respondents responded on the detrimental effects of migration in the destination region. 32 (28.57%) and 59 (52.68%) of the 112 sample respondents, respectively stated that social service issues and population pressure were the primary reasons for migration to the town. Of the respondents, 4 (3.57%) said that migration increased the quantity of land needed for home development in the destination area, while 17 (15.18%) said urban unemployment was the third most common cause. It would seem from this that the town's quick population rise was facilitated by migration from adjacent rural and urban Woredas.

Furthermore, Malik et al. (2020) verified that a substantial portion of rural people moving to urban areas has resulted in high population densities and strain on urban infrastructure, resources, and land. According to Evers (2012) and Habtamu (2015), the influx of people into destination regions puts a burden on employment opportunities as well as access to housing, healthcare, and education. Ghafoor et al. (2021) and Rana and Bhatti (2018) also claimed that urban ward migration led to the depletion of infrastructure, including water resources, and inadequate infrastructure provision of services.

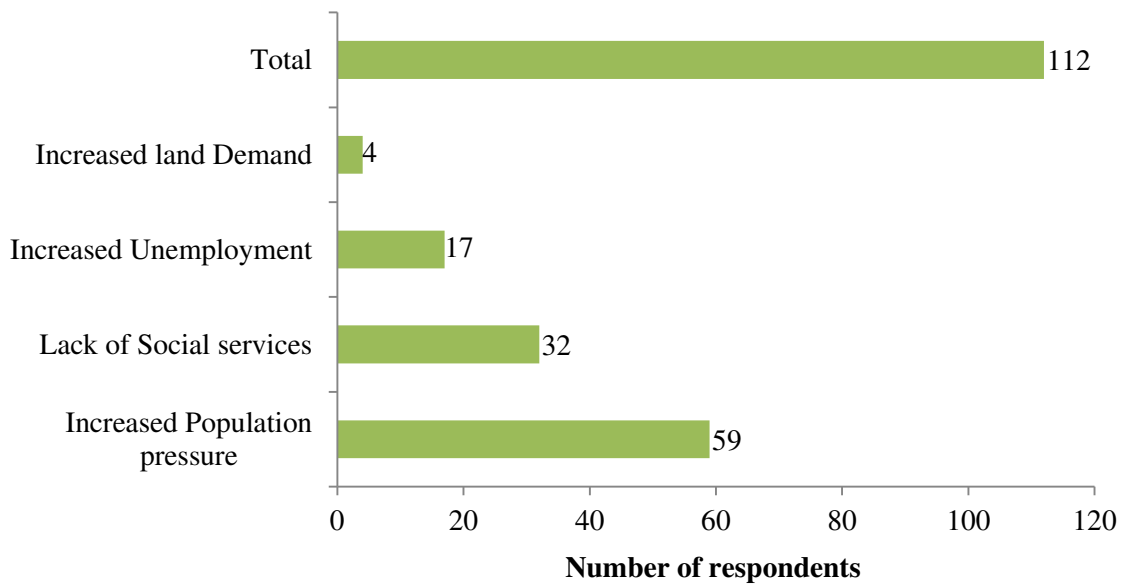


Figure 4.9.The Negative Effects of Migration at Place of Destination

(Source: Field Survey, 2021)

The finding of the study in **Fig. 4.9** also depicted that 15.18% of the migrants were unemployed. This finding is somewhat in line with a study conducted in Woldia by Miheretu (2011), which revealed that 18.6% of the migrants were unemployed during the survey period. In this context, Chokoe and Meso (2017) also carried out a study in South Africa and discovered that an increasing number of migrants make urban living challenging and raise the unemployment rate in the nation, which in turn causes a rise in urban poverty. This leads us to the conclusion that, despite the two studies (conducted at Woldia) showing minimal difference, urban ward movement had caused urban unemployment in the town.

Mayors and Kebele managers of the town participated in key informant interviews about how migration affects the urban environment and the provision of essential social and infrastructure services. They verified that the town's increasing migrant population, which demanded additional infrastructure and social services, was making the most use of its urban resources. Accordingly, Abdul and Yu (2020) have demonstrated that urban migration is linked to a rise in urban poverty, overcrowding, environmental pollution, poor sanitation, crowded housing, traffic jams, traffic accidents, and criminal activity.

Due to a shortage of urban land on by population pressure, the results of focus group discussions and key informant interviews also provided more evidence in favor of the theory that migration can increase the number of urban squatters and cause towns to unplanned expand beyond their planned development. They have to move out of town to dispersed and remote locations in an

informal way. Here, land is available for purchase at reasonable prices or by any other means, including squatting or informal acquisition. 80% of the dwelling plots in peri-urban Woldia are unplanned, according to an empirical study on the town's informal settlement by Baye et al. (2023). This finding is in line with the results of the survey, focus group discussions, and interviews.

Migration Decision and Destination Areas

Numerous factors, such as individual circumstances and more general environmental changes, influence migration decisions to destination places. Study indicates that a person's decision to migrate or not might be influenced by their individual and family circumstances. In this regard, Haile and Litchfield (2019) noted that the choice to migrate is one of the most significant social and economic choices a person may make,. A number of push and pull variables may impact the choice to migrate. Job prospects, aspirations for a better life, personal risk-taking and aspirational behaviors, and migration expenses can also have an impact on a person's decision to migrate.

Table 4.17 Respondents decision to migrate and main source of information about Woldia

		Main source of information					Total
		Education	Mass media	Contact people	Previous knowledge	Other	
Decision	Self	108	24	70	42	12	256 (65.)
	Family	27	8	23	9	5	72 (18)
	Relatives	7	7	9	3	2	28 (7)
	Employer	7	6	2	4	1	20 (5)
	Others	6	2	4	4	3	19 (4.8)
	Total		154(39)	47(12)	108 (27)	62(16.7)	23(6)

(Source: Field survey, 2021)

In **Table 4.17**, the numbers in parenthesis represent percentages of the total (n = 395). Additionally, the people's decision was influenced by source of information they obtained. According to the survey's findings, 65% of the sampled households were decided to migrate individually, followed by family decision (18%) The remaining, 7%, 5% and 4.8% of the respondents were made decision by relatives or friends, employer, and others respectively.

Table 4.17 also reveals the migration decision to migrate to Woldia and the main sources of information as a result of this survey. The results showed that of the 395 sample household respondents, 154 (39%) of the respondents decision were influenced by education while only (27%) of the respondents source of information was contact people who know the destination area well, and

the remaining 16.7%, 12%, and 6% of the respondents source of information were previous knowledge of the town, mass media, and others respectively.

Different empirical studies are consistent with the finding of this study. For instance, the neoclassical migration theory of Todaro (1969) stated that the decision to migrate is individual who has the rational of cost-benefit calculations to maximize income and opportunities. The new economics labor migration theory developed by Stark in 1985 and Taylor (1999) also pointed out that the decision to migrate is made at the household level in order to maximize the welfare of the households. It also states that migration decisions such as who goes, where to go, for how long and to do what are not individual decisions rather joint decisions taken within the realm of the household . Therefore, the household is both an actor and a decision maker in migration process. Sometimes the scale of the decision-making unit moves further into the extended families and wider communal groups (Stark and Bloom, 2013).

Furthermore, social network migration theory of Taylor and Wyatt (1999) aligns with this study and they noted that a migration decision is influenced by the presences of relatives, kinship or friends at destination areas on the ways in which close ties to the destination community can help recent arrivals by giving them access to material support and job information.

Haile and Litchfield (2019) claimed that migrant' expectations of receiving greater social or economic benefits influence their choice of destination. Additionally, a migrant's decision to migrate is influenced by their financial resources, their social network in their new country, and information about the destination. Comprehending the decision of migrant destination is a crucial area of study and has significant implications for migration policy. Policymakers can create sensible regulations and policies to balance resources in the migration destination and safeguard the economic and social rights of migrants by having a better understanding of the reasons behind migrants' destination choices.

From the discussion so far, the negative effects of migration led to a number of social problems, such as housing, health, education, and other services, in addition to an economic problem (urban unemployment) in the region. Additionally, the results align with those of Miheretu (2011), Evers (2012), Habtamu (2015), Chokoe and Meso (2017), Rana and Bhatti (2018), Abdul and Yu (2020), Ghafoor et al. (2021), Malik et al. (2020), and Baye et al. for 2023.

4.1.7. Migration, Remittance and Horizontal Spatial Growth

4.1.7.1 Migration and Remittance

The third identified research question which emphasized on the roles of remittance for the spatial growth of the Woldia town is presented and discussed in this section by considering the sub-research questions of the main reasons for migration, destination areas of migrant, why migrant remit money to home area, the various channels that migrants' used to transfer remittance money from their destination areas to the origin, the major challenges to use formal channels, and the main effects of remittance for households' at place of origin. On the rationale of this, data gathered from questionnaire, key informant interviews, and personal observation are discussed.

Household Migrant Family Living Abroad

Remittance inflow from migrant household living abroad are becoming an important sources of finance for home area of their family members. Inflows of remittance increase the income of the recipient households in home area. To identify the households whether they had family living abroad or not, 395 sample respondents were distributed. Of these, 205 they were replied that they had migrant families living abroad and the remaining 190 were responded that they did not have. The responses of the respondents are presented in **Table 4.18**

Table 4.18. Respondents' response on migrant family living abroad

Response	Frequency	Percent
Yes	205	51.9
No	190	48.1
Total	395	100

(Source: Field survey, 2021)

Table 4.18 shows the majority of the sample respondents 205 (51.9%) replied that they had migrant family living abroad and the remaining 190 (48.1%) had not migrant family. This implies that those who had migrant family had the chances receiving remittance from the destination areas may have significant and multifaceted implications for recipient households. These effects can be both positive and negative, influencing various aspects of economic, social, and cultural life of the household

Reasons for migration and destination areas of the migrant family

Migration is a complex phenomenon driven by economic, social, environmental, and political factors which induced people to migrate from their place of origin to destination areas. The main reasons underscore by the respondents for the purpose of this section of the study includes social ties,

economy and institutional factors. Destination areas are the host regions that migrant are found. Accordingly, the main destination areas of the household migrant are Africa, Europe, Middle East and the Gulf Regions and North America. The reasons of migration and the destination area of respondents' migrant family are presented in **Table 4.19**.

Table 4.19 Reasons of migration and destination areas

		Migrant Destination Regions				Total
		Africa	Europe	Middle East	North America	
Reasons for migration	Support family	6	5	44	33	88 (42.9)
	friends and family	17	3	45	8	73 (35.6)
	get better life	3	7	9	7	26 (12.7)
	Agencies and brokers	5	0	10	3	18 (8.8)
Total		31	15	108	51	205
		(15.1)	(7.3)	(52.9)	(24.9)	(100)

(Source: Field Survey, 2021)

In **Table 4.19**, the numbers in parenthesis represent percentages of the total (n = 205). Moreover, various reasons of migration at place of origin caused the respondents migrant family to migrate in to different regions of the world. According to the survey's findings, 42.9% of the sampled households were reasoned out that their families migrated to support their households financially, followed by the networking of friends and relatives (35.6%) The remaining 12.7% and 8.8% of the respondents were justified that to get better life and agencies and brokers as institutional factors respectively. This finding is consistent with Stouffer (1940) who pointed out that the magnitude of migration depends on the quantity of opportunity and the sum of the push and pull factors at the origin and destination areas determine the amount of migration. Furthermore, Clement et al. (2021) stated that that the primary motivations for people to migrate to other regions are personal fulfillment and economic gains.

According to the survey's findings, social networking with friends and family in the destination area is one of the main causes of migration. McKenzie and Rapoport (2007) discovered that, in addition to the individual's motivation, friends and family also influence a person's decision to leave their home country and migrate to another. Social networks therefore influence people's willingness and ability to leave their homes. In addition, Haug (2008) and Van Hear et al. (2018) claimed that the presence of pre-existing social networks can help people move or change.

People relocate to others areas because they assumed that moving to other regions will benefit them to get better way of life. According to Zhang (2016), areas with better social environment and services are the driving forces behind social, cultural, and technological improvements and give more opportunity for learning and sharing. This induced the migration of people from one geographic region to other.

Other reasons that contribute to people leaving their hometowns include pressure from brokers and agencies. According to Haile and Litchfield (2019), it is more typical for foreign migrants than for domestic migrants to have an agent as a contact prior to migration. Employment opportunity at destination: as indicated before, most migrants have chosen to relocate to their current location mostly in search of employment.

Table 4.19 also reveals the main destination regions of the migrants were identified which is driven by different factors. The results showed that from 205 sample household respondents of migrants families living abroad, the majority of them 108 (52.9%) were located in the Middle east and Gulf regions, followed by 51 (24.9%) found in North America. The remaining 31 (15.1%) and 15 (7.3%) were located in Africa and Europe respectively. This survey result aligns with Kuschminder and Siegel (2014) who pointed out that Middle East region regions are the main migration corridor for Ethiopian migrants, with half of all current migrants having migrated to this region. Furthermore, the Regional Mixed Migration Centre (RMMS) (2018) found that the Eastern Route, which connects Ethiopia with the Middle East via Djibouti or Somalia, is a popular irregular migration route.

As the findings shows that migrant employed the northern route. In this context, Thiruneh (2020) noted that Ethiopian migrants use the Northern Route which stretches from the Horn of Africa to Europe via Sudan and Libya. Additionally, Kuschminder and Siegel (2014) pointed out that Ethiopian migrants to the North have greater educational attainment and are more likely to migrate lawfully, and are likely to remain for a longer period of time.

Africa is the other destination areas of the household migrant families. This result is consistent with Horwood (2009) pointed out that migrants come to South Africa are Ethiopia and two thirds of all migrants from the Horn of Africa come from Ethiopia alone. Furthermore, Teye (2021) found that the majority of Ethiopian migrants in South Africa are engaged in informal trade (spaza shops).

Means of Migration and Migrants Source of Financing

Migrants were employed different ways to migrate the destination areas. The main means of migration include legally via agencies, illegally cross borders, and in the pretext of visit. To reach at destination areas, they employed costs of migration. Their sources of financing were not the same and

include personal savings, household savings, sale of assets, and loan from relatives. **Table 4.20** shows the means of migration and migrants' source of financing

Table 4.20 Means of migration and migrants sources of financing

		Source of Financing				Total
		Personal saving	Household saving	Sale of assets	Relatives loan	
Means of migration	Legally via agencies	16	21	25	28	90(44)
	Illegally cross borders	18	3	28	37	86(42)
	In the pretext of visit	9	17	2	1	29(14)
Total		43	41	55	66	205
		(21)	(20)	(26.8)	(32.2)	(100)

(Source: Field Survey, 2021)

In **Table 4.20**, the numbers in parenthesis represent percentages of the total (n = 205). Furthermore, means of migration and sources of financing migrants to migrate to different regions of the world are presented. According to the survey's findings, 44% of the sampled households' migrants' family were used legal means of migration, 42% were employed illegally cross bordering and the remaining 14 % were pretext of visits as means of migration.

Table 4.20 also depicts that money from personal savings, household savings, sale of assets and loan from relatives were reported as the main source of migration finance by the households of the migrants. Most migrants, 66 (32.2%), typically use loans from family members to pay for their travel. Approximately 26.8% of the migrant households said that the primary source of funding for their travel to the destination regions was money obtained from the sale of assets. According to this finding, either only those with greater financial resources or access to credit are able to migrate, or migrants have restricted access to credit to finance their migration. The remaining 21% and 20% of the migrant households, respectively, relied on household and personal savings for their financial needs.

Determinants of Remittance

Migrants are motivated by different variables to send remittance to home areas. In this regard, Getachew (2009) noted that there are different microeconomic theories of remittance that justifies the motivation to remit by migrants to families back home. These include altruism, self-interest, household composition, economic status of the migrant and household, cultural and

social norms, and access to financial services. Accordingly, **Table 4.21** depicts the main determinants of remittance that migrants are motivated to send money home back.

Table 4.21 Respondents Response on determinants of remittance

Determinants	Frequency	Percent
Pure Altruism	60	29.27
Self interest	50	24.39
Household composition	25	12.20
Economic status of migrants and households	35	17.07
Culture and social norms	20	9.76
Access to financial services	15	7.32
Total	205	100

(Source: Field Survey, 2021)

As **Table 4.21** depicts, the majority of the respondent 60 (29.27%) replied that pure altruism was the motives behind to remit back home, followed by self-interest 50 (24.39%). The remaining 17.07%, 12.20%, 9.76% and 7.32% of the respondents responded that economic status of the migrants and households, household composition, culture and social norms, and access to financial services were the motives to send back home respectively.

The findings of the study shows that migrants sent money home without anticipating anything in return by considering they really want to improve the lives of their relatives or communities in the way of pure altruism. In this regard, Lucas and Stark (1985) found that migrants return a portion of their earnings back to their home nations in order to improve family members' well-being by giving them extra money. Self-interest was the other motives of the findings of this study. This result is consistent with B. de la Baière et al. (2002) found that the migrants send money home are to invest in local assets and to receive a share of the family's inheritance and encourage remittances for investments, in fixed capital assets of land or a house.

Economic status of migrants and households were the other determinants of remittances as the result of the study depicts. Family members of migrants are more inclined to assist households with low incomes or those experiencing financial difficulties. In light of this, Acosta et al. (2008) asserted that a household's financial status has a major impact on remittance behavior. Increased income allows migrants to send more money home. In this regard, World Bank (2023) noted that larger payments are more likely to be sent by migrants who have more money to spare.

Household composition, culture and social norms, and access to financial services were the motives behind to remit home. In this regard, Bollard et al. (2011) pointed out that the frequency and magnitude of remittances can be influenced by the number and kind of dependents such as children, elderly family members, or people with disabilities in a household in the home country. In order to cover expenses like healthcare and education, households with more dependents usually receive larger or more frequent transfers.

According to Niimi and Ozden (2008), cultural norms and community expectations frequently determine remittance behavior. In societies where providing for family members is a strong tradition, migrants are under pressure to send money home, which results in higher remittance flows motivated by a sense of obligation. This demonstrates how migrant workers' decisions to remit money are influenced by social norms in their home country. Seshan and Yang (2014) stated that larger and more regular remittances are more likely to reach households with access to banks or mobile money services because it reduced transaction costs and improved dependability. Informal routes may result in smaller or less reliable transfers due to limited access. This illustrates how migrant workers' remittance patterns are influenced by their financial availability when sending money back home.

Channels of Remittance

The money that migrants send home to their families or communities back home is essential for household resilience, economic growth, and poverty reduction. These transactions are made possible by a variety of channels, which vary from official financial systems to unofficial networks and are influenced by regulatory frameworks, accessibility, cost, and speed. Remittance channels show how financial regulations, technology advancements, and migration trends interact. Informal methods continue to be used because they are flexible and culturally relevant, even when formal systems provide security and transparency (World Bank, 2023). **Table 4.22** illustrates the main channels used by the household migrants to send money to home back

Table 4.22. Remittance channels used by migrants

Remittance channels	Frequency	Percent
Bank	91	44.39
Western Union	17	8.29
Friend and relative	75	36.59
Bank and friend	22	10.73
Total	205	100

(Source: Field Survey, 2021)

As we can see from **Table 4.22**, the majority 108 (52.68%) the sampled household migrants were employed the formal channels such as Bank and Western Union, followed by 36.59% of the informal channels (friends and relatives) and the remaining 10.73% employed both the formal and informal channels. Key informant interview of Awash, Commercial and Dashen Bank managers in the study area also confirmed that the migrant households sent their money via formal channels.

Official money transfer agents handle the largest portion of remittances as the study finding depicts. This study is consistent with Zewdie and Legesse (2015), who stated that 72.51% of migrant employed Banks and Western Union to send remittance for their families, 24.13 % of them used friends and relatives, and 3.4 % banks and others channels. Hernández-Coss (2005) noted that between 2000 and 2005, the US-Mexico corridor's informal transfers decreased from 80% to 50% as a result of regulatory changes (such as anti-money laundering regulations) and bank-MTO cooperation.

However, individuals or informal agents still play a significant part in remittance transfers. In light of this, El-Qorchi et al. (2003) discovered that despite its hazards, which include money laundering and a lack of legal consequences for fraud, Hawala accounts for 30 to 50% of remittances in Somalia and Pakistan because of its speed, trust, and lack of verification. Additionally, Singh et al. (2010) pointed out that 60% of Nepali migrants avoided fees and bureaucratic obstacles by using unofficial methods. Baruah (2006) conducted a survey study in some developing countries and highlighted that informal remittance channels predominate over official ones, with lower informal usage in the Caribbean and higher informal usage in South Asia and Sub-Saharan Africa.

According to Russell (1992), a variety of factors, such as the recipient's and household members' socio-economic status, the amount and type of economic activity in the host country, the exchange rate, the cost of remittances, and the relative efficacy of formal versus informal channels, influence the decision to send money through formal or informal channels. To this end, in order to improve financial inclusion, lower transaction costs, and lessen the dangers associated with informal techniques, policymakers, financial institutions, and researchers must have a thorough understanding of these channels.

Challenges of Migrant Household Members to Use Formal Channels

As **Table 4.23** shows, informal channels were employed by migrant households in the study. In developing countries including Ethiopia informal channels are common and frequently function outside of formal financial institutions. They are motivated by cost-effectiveness, cultural trust, and accessibility a combination of structural, economic, social, and pragmatic factors that make formal

systems less desirable or accessible. There are drivers of usage of informal channels by migrants to send home back. The main drivers addressed by the migrants include weak financial institution; high costs of formal channels; cultural and social ties; and accessibility and flexibility.

Table 4.23 Challenges of migrant households to use formal channels

Challenges to use formal Channels	Frequency	Percent
Weak financial institutions	57	27.80
High costs of formal channels	68	33.17
Accessibility and flexibility	38	18.54
Cultural and social ties	42	20.49
Total	205	100

(Source: Field Survey, 2021)

As we can see from the **Table 4.23**, the majority 68 (33.17) of the migrant household responded that high charges of formal channels were motivated to use the informal channels followed by 27.80% weak financial institutions. The remaining 20.49 % and 18.54% were initiated by cultural and social ties, and accessibility and flexibility.

The survey result is consistent with Kakhkharov and Rohde's (2020), who pointed out that due to high charges and unfavorable currency rates, formal transfers usually result in a reduction of the little amounts that migrants send. A \$200 Western Union transfer from the US to Ethiopia can cost between \$10 and \$15 (5-7.5%), plus currency exchange rate losses due to a restricted birr. Hand distribution or Hawala are examples of informal alternatives that totally avoid these costs. In contrast to informal channels, which charge 2-5%, formal channels charge 8–12%. They found that these disparities in fees push migration toward.

Weak financial institutions or poor banking infrastructures were one of the main challenges to use informal channels particularly in rural areas where the majority of remittance beneficiaries reside in most developing countries including Ethiopia. In line with this, Singh et al. (2011) claimed that rural areas' inadequate banking infrastructure encourages reliance on unofficial networks.

Moreover, Freund and Spatafora (2018) noted that official channels like banks or MTOs need physical locations or digital access, but this is made difficult by poor roads, erratic electricity, and a limited internet (Ethiopia had a 25% internet penetration rate in 2023). Between 50 and 75 percent of all remittances in these locations are informal flows, which dominate formal financial access, according to their findings.

Cultural and social ties were considered as the migrant households to employ the informal channels. This finding is consistent with, Maimbo (2003) who asserted that Hawala overcomes bureaucratic obstacles and thrives on ethnic or familial ties. He found that in Ethiopia, migrants frequently transfer funds via friends, family, or ethnic networks, such as migrant workers in Dubai gives money to a returning trader close to his/her ties. According to Orozco and Ellis (2016), using agents connected to clans or kinship groups, Hawala, which is popular in the Horn of Africa, thrives on this trust. They also noted that cultural familiarity with informal institutions exceeds the perceived hazards, especially in close-knit diaspora communities abroad (such Ethiopian enclaves in Washington, D.C.).

The finding of the study shows that accessibility and flexibility contributed the use of informal channels. In light of this, Ratha (2003) stated that migrants may avoid paying taxes or providing the necessary papers, which is known as regulatory avoidance. In Lebanon, an Ethiopian maid, who often does not have proper documents, can send money to a courier but is unable to easily access a bank. Furthermore, Maimbo and Passas (2004) pointed out that recipients in remote Amhara or Sidama regions can still pick up from a local dealer even if there might not be an MTO representative nearby. Additionally, during Ethiopia's currency shortages in 2021, Hawala networks continued to move money while banks paused, showing how unofficial channels may adjust to emergencies. They argue that because of its versatility, Hawala provides a lifeline in fragile countries like Ethiopia.

4.1.8.1 The Effects Remittance on Migrant Households Members at Place of Origin

Economic Effect

The money that migrants send home to their relatives back home has a big impact on the socio-economic dynamics of households. In this regard, Adams and Page (2005) noted that remittances directly increase household income, frequently enabling families to escape poverty. A 10% rise in remittances per capita is associated with a 3.5% decrease in poverty in developing nations. Furthermore, Ashenafi and Haile (2016).stated that migrant' remittances are crucial in raising households' standards of living and lowering their degree of vulnerability

Table 4.24 Family received remittance and duration of time migrant sent

		Money received by family in the past 12 months in Ethiopian birr					Total
		< 10,000	10,001-20,000	20,001-30,000	30,001-40,000	>40,000	
Time to send money	Regularly	13	18	27	29	11	98(48)
	When needed	6	19	16	8	10	59(29)
	Once in a year	2	2	2	2	3	11(5)
	Twice in a year	0	5	6	14	12	37(18)
Total		21	44	51	53	36	205
		(10)	(21)	(25)	(26)	(18)	(100)

(Source: Field Survey, 2021)

In **Table 4.24**, the numbers in parenthesis represent percentages of the total (n = 205). Moreover, the duration of time that migrant sent money for their family and the money received by family are presented. According to the survey's findings, the majority of the migrants 98 (48%) of the migrants household sent money at regular base, followed by 29% of the migrant households sent when needed as a whole. 18% of the migrant households sent money for their family two once in a year and the remaining 5% sent once in a year..

Table 4.24 also reveals the yearly amount of money that the family received from the migrants. The results showed that from 205 migrant household respondents, 53 (26%) of them received between 30,000 and 40,000 birr per year. Whereas 36 (18%) of the respondent received great than 40,000 birr per year. The remaining 51 (25%), 44(21%), and 21 (10%) of the respondents were received between 20,000 and 30,000, 10, 000 and 20,000, and less than 10,000 birr respectively. Since informal channels had the tendency to understate the quantity of money received, the key informant interviews with bank managers indicated that the amount of money sent by migrants and received by the family members exceeded the survey data. Furthermore, data obtained from Awash, Commercial and Dashen Banks of the study area from the year 2016 to 2020 depicted that the inflow of remittance to Woldia town was 1,781,451.70 birr for Awash Bank, 5, 460,758.31 birr for Commercial Bank, and 4,548,584.32 birr for Dashen Bank for five year periods. More inflow of

remittances was observed in commercial Bank of Ethiopia followed by Dashen Bank. The average inflow of remittances in the town was 3,267,875.59 birr in five year periods.

The survey result clearly shows that remittances from migrants may prove to be a valuable source of income and a means of risk diversification for families back home. In this regard, Osaki (2003) noted that remittances have the ability to significantly increase household savings, facilitate purchases, and alter the way money is distributed across the community. Binford (2003).also stated that one way that migrants mainly provide financial support to those they have left behind is through remittances One domestic strategy to boost the family's sources of income and create additional funds for recurring needs is the remittances (Binford, 2003; Bekele, 2013).

4.1.8.2 The Positive Effects of Remittance Driven Growth

The data derived from the study in the context of using remittances indicate that remittances were mainly used for productive investment, household consumption, developing new and renovate housing as **Table 4.25** shows.

Effects of Remittance on Saving and Productive Investment

Remittances are not only used for immediate consumption but also play a critical role in savings and productive investment for migrant households. In this regard, Gupta et al. (2009) pointed out that productive investments enhance income-generating capacity and long-term economic resilience, and remittances raise the likelihood of entrepreneurship by 8–10% in Indian households.

Table 4.25 in the survey depicts that 28.78% of the family members of the migrant used remittance. In this regard, Nepal (2013) discovered that remittances from migrants are now a common source of micro-level income and have become a stable source of income for the households that send the migrants as well as a source of hard currency and income for developing-nation countries. Saving money and putting it into worthwhile endeavors is one, possibly the most sustainable, method to use remittances. Furthermore, IOM (2013) states that international migration and remittances can contribute to the welfare of host countries, offer investment capital, and have significant positive effects on the development of the home country. Considering this in mind that the inflow of remittances in the study area had an effect and **Fig.4.10** illustrates remittance driven productive investment at Arero site (kebele 01) on the left and Tinfaz site (Kebele 02)at right of the study area.



Arero site (Kebele 01)

Tinifaz site (Kebele 02)

Figure 4.10 Remittance driven productive investment

(Source: Field survey, 2021)

Effects of Remittance on Consumption

In migrant households, remittances have a big impact on purchasing patterns and frequently raise living conditions. According to Adams and Cuecuecha (2013), remittances increase households' disposable income, allowing them to spend more on non-essential (electronics, leisure) and essential (food, clothing, utilities) products. According to the study's findings, remittances were mostly utilized for daily expenses such as clothing, food, and other necessities for the family. The study also discovered that those households spent about 24.88% of their remittances on consumption.

This finding is consistent with similar research, in Guatemala, which identified that households received remittances spent 60% of their inflows on consumption, increasing their general well-being (Adams & Cuecuecha, 2013). Furthermore, an empirical study on "Migration, Remittances, and Household Welfare in Ethiopia" by Lisa (2012) found that the primary source of household spending was consumption.

Effects of Remittance on Housing Development

In developing nations, remittances play a significant role in financing both new home construction and home renovations. In addition to increasing income, remittances can help many migrant sending households acquire and own assets, including real estate, livestock, savings accounts, and private enterprises (Taylor et al.,1996; De Haas & van Rooij, 2010;). Here, housing includes building new homes, remodeling old ones, and, when necessary, spending money on upkeep and upgrades for existing homes.

The findings of the study show that 23.41% and 22.93% of the migrant household members were used the remittance for developing new houses and renovating the existing one respectively. This result is consistent with Taylor et al. (1996), who found that Mexican migrant households were more likely to possess a concrete or brick home by 22% when compared to non-migrant households and that they spent 15–20% of their remittances on new housing, frequently in urban areas. Given this, Adams and Cuecuecha (2010) noted that 25% of remittances in Guatemala went toward the construction of new dwellings, and that remittance-receiving households were 30% more likely to make housing investments than non-receiving households. In addition, De Haas and van Rooij (2010) found that that building multi-story homes in villages accounted for 40% of Moroccan remittances. **Fig.4.11** shows that new house development in Woldia town driven by remittance at the Admasbashagre site.



Figure 4.11 house development driven by remittance at Admasbashagre site of Woldia

(Source: Field survey, 2021)

Remittance enhanced to renovate the existing house according the finding of this study. The result of this study is consistent with Durand et al. (1996) found that 30% of Mexican households used remittances to renovate homes, including adding rooms, electricity, or plumbing and renovations improved living standards and property values by 15–25%. Osili (2004) pointed out that Nigerian migrants allocated 20% of remittances to home improvements, such as roofing upgrades and sanitation facilities and renovations were more common in urban areas, where housing conditions were poorer. Moreover, Siddiqui et al. (2003) 18% of remittances in Bangladesh funded home repairs,

including flood-resistant materials and renovations reduced vulnerability to environmental shocks in coastal regions.

There are always striking differences between the size and quality of homes with and without remittance investments. The size and quality of a family home are the most obvious public indicators of their financial well-being. Having a large, high-quality home is a significant status symbol that families use to indicate their privileged position in the community and that migrants use to show that their migration experience has been successful. In line with this, Nepal (2013) claimed that housing absorbs a large portion of remittance flow as a form of foreign saving, and after receiving remittances, households were found to be upgrading their roof, repairing their floors, or even building a new home. Such homes not only help ensure greater physical safety but also improve people's economic security.

Table 4.25 Migrant family members used remittance money for different purposes

Purpose of Remittance	Frequency	Percent
Household consumption	51	24.88
Productive investment	59	28.78
Developing new house	48	23.41
To renovate a house	47	22.93
Total	205	100

(Source: Field Survey, 2021)

4.1.8.3 The Negative Effects of Remittance Driven Growth

Remittance contribute to the growth of informal settlements by supporting unplanned housing in places with little land tenure security, infrastructure, or regulatory monitoring.

Migrant households frequently purchase more land for dwelling, farming, or speculative investment as a result of remittances. By providing funds for infrastructure, commercial development, and residential growth, remittances have an impact on urban land use and frequently change the face of cities in developing nations. **Table 4.26** reveals that the negative effects of remittance of the study area which includes the growth of informal settlement, it enhances migrant household members to demand urban land and it enhances the changes of urban land uses.

Table 4.26 Responses of migrant household members on the negative effects of remittance

Negative effects	Frequency	Percent
It increases informal settlement to grow to peri-urban areas	80	39.02
It enhances migrant household members to demand urban land	74	36.10
It drives the changes of urban land use in the town	51	24.88
Total	205	100

(Source: Field Survey, 2021)

As we can see in **Table 4.26**, the majority of the respondents 80 (39.02%) of them were replied that remittance drive the growth of informal settlement followed by 36.10% enhanced for demand for urban land. The remaining 24.88% of the respondents were responded that it drives the changes of urban land use.

Effects on the Growth of Informal Settlement

As the study finding reveals the growth of informal settlement in Woldia was driven by remittance. This result is consistent with Degefa and Simatele (2017) found that 40% of remittance-receiving households in peri-urban Addis Ababa lack formal land titles, which contributes to the growth of squatter settlements. They also discovered that remittances finance the construction of housing in these areas, where informal settlements (such as Kolfe Keranio and Bole Bulbula) proliferate due to unregulated land markets. According to Dessalegn (2009), squatter settlements expanded by 12% yearly in the early 2000s, in part due to remittance-funded housing, and inadequate land tenure mechanisms in Addis Ababa encourage migrants to invest remittances in informal settlements rather than formal land purchase through bureaucratic means.

Furthermore, Durand et al. (1996) pointed out that 25% of migrant households in Mexico that receive remittance funding constructed homes in peri-urban informal zones where land was less expensive but lacked official titles or utilities, which exacerbated urban development and overpopulation. According to Owuor (2017), 30% of housing investments in Nairobi's informal settlements (like Kibera) were made with remittances. In these settlements, migrants avoided conventional land markets, and uncontrolled construction was permitted due to a lack of zoning regulations, which exacerbated traffic and sanitation issues.

According to Arif and Irfan (2011), remittances fueled the expansion of informal settlements in Karachi of Pakistan, as migrants avoided formal land registers in search of affordable accommodation close to industrial areas. Moroccan migrants invested their remittances in informal urban dwellings, such as the bidonvilles of Casablanca, where unplanned growth was made possible

by inadequate governance (De Haas and van Rooij, 2010). According to Osili (2004), 60% of Nigerian migrants in Lagos' informal settlements lacked valid land titles, and they built homes there using remittances.

Baye et al. (2023) conducted an empirical study in Woldia on "Administrative failures contributing to the proliferation and growth of informal settlements." the study concluded that the absence of clear law enforcement against illegal builders was the reason behind the rise of squatter settlements in the town's periphery. Although the factors he identified were different from those found in the current study, it shows that informality was growing at the town's peripheries.

Key informant interviews with the municipality's urban land manager and kebele 02 managers also verified that the influx of remittances to Woldia town from around the world, particularly from the Middle East and Gulf region induced in the growth of the squatter settlement on the outskirts. According to the involved interviewee from the municipality's illegal construction control and peacekeeping core process owners, police may detain an individual who violates the land use law for a maximum of one or two days, but there is no legal basis for the illegal builder or actor involved to be imprisoned for their illegality and be imprisoned for a specified period of time. Consequently, peri-urban areas are vulnerable to unauthorized occupations due to the absence of a public law or disciplinary code, as well as the lack of accountability for the illegal occupations that are taking place there. The interviewees also mentioned that corrupt officials are usually in charge of settling informal settlements, frequently harassing and demanding bribes from informal developers. **Fig. 4.12** reveals that the growth of squatter settlement at the peripheral area of Tinifaz site (Kebele 02).



Figure 4.12 remittance driven squatter settlement at Tinifaz site (Kebele 02)

(Source: Field Survey, 2021)

Effects on the Growth of Urban Land Demand

Remittance enhances the household purchasing power on urban land. The finding of the study depicted that 36.10% of the respondents replied that inflow of remittance induced to demand on urban land. This finding is consistent with Admassie and Adenew (2008) discovered that urban development encroached on agricultural property, changing land-use patterns, and that rural-to-urban migration, assisted in part by remittance-funded relocations, raised demand for residential and commercial land in cities like Adama and Bahir Dar. According to Mazzucato et al. (2005), as a result of growing property values in Accra and other cities, Ghanaian migrants spent 25% of their remittances in urban and peri-urban land. These land purchases were frequently speculative, with the goal of profiting from future urbanization.

According to Taylor et al. (1996), land acquisitions in rural Mexico were concentrated on obtaining urban plots for future housing or increasing agricultural plots, and remittance-receiving households were 20% more likely to buy land than non-recipient households. In this context, Arif and Irfan (2011) pointed that remittances raised land demand by 25% in Punjab, Pakistan, as households purchased agricultural land to diversify their revenue streams. According to Osili (2004), 15% of remittances from Nigerian migrant households went toward purchasing land, especially in Lagos, where obtaining land represented social standing and financial stability and formal land markets were unavailable.

Effects on Changes of Urban Land Use

The conversion of agricultural property to non-farm, commercial, or residential uses is often financed by remittances. According to Gray and Bilsborrow (2014), remittances, for instance, lead to land fragmentation and the abandonment of subsistence farming in Ecuador in favor of urban-oriented land usage, decreasing farmland and changing rural landscapes as households invest in homes, businesses, or speculative land purchases. The survey results indicate that 24.88% of the respondents said that remittances facilitated the conversion of agricultural land into urban land.

This study supports the findings of Tacoli et al. (2015), who discovered that remittances incentivize households to convert agricultural land into residential or commercial structures, especially near urban peripheries. According to the same source, remittances, for instance, promote land conversion for residential use in Ghana and Nigeria, which feeds peri-urban sprawl. According to Durand et al. (1996), 30% of migrant households bought peri-urban parcels, which led to sprawl and a reduction in open spaces, while remittances financed the building of homes on Mexico's urban peripheries, turning agricultural land into informal settlements.

According to De Brauw et al. (2014), in Amhara region, remittance-receiving households are more likely to convert farmland into small businesses or rental units. Moreover, Adams and Cuecuecha (2010) found that remittances boosted speculative land purchases in Guatemala City's outskirts, where informal settlements lacked zoning and amenities. Mack et al. (2023) pointed out that remittance is a significant financial factor influencing land transformation in many recipient developing countries. The study also found that the growth of the migrant population and the increasing amount of money that returns home as a result, remittances are expected to continue to support further land changes and affect the livelihoods of individuals who rely on that land. In this regard, Mazzucato et al. (2005) discovered that Ghanaian migrants converted residential areas into shops and offices by investing their remittances in Accra's commercial real estate, and that land prices in neighborhoods controlled by migrants increased by 40%.

4.1.9 The Land Use /Land Cover Distribution of Woldia Town

4.1.9.1 The Major Drivers of LULCC in Woldia

Before the detail discussion of the drivers of LULCC in Woldia, it is better to discuss the nexuses of migration and LULCC. Whether it occurs across borders or from rural to urban areas, migration plays a significant role in spatial expansion. Rapid urbanization has led to LULCC, uncontrolled urban sprawl, and a pressure on infrastructure and resources in two emerging regions: South Asia and Sub-Saharan Africa (UN-Habitat, 2020). In this regard, Bodo et al. (2021) pointed out that the quality of the habitat and ecological integrity are seriously threatened by the changes in land use and land cover (LULC) brought about by migration and urbanization. Farmland used for crop production has decreased, and habitat loss is the result of a complicated interaction and coupling process between land use/cover change and habitat quality. **Table 4.27** shows the impacts of migration on LULCC.

Table 4.27 Respondents response on migration and LULCC

Response	Frequency	Percent
Yes	325	82.28
No	70	17.72
Total	395	100

(Source: Field Survey, 2021)

As we can see from the **Table 4.27**, the majority of the respondents 325 (82.28%) replied that migration was one of the drivers of migration LULCC and the remaining 17.72% responded that it had no effect. This result is consistent with Brenner and Schmid (2015) discovered that the conversion of natural or agricultural landscapes into residential and industrial zones is accelerated in

peri-urban areas where migrants often settle. This spatial development exacerbates socioeconomic inequality by frequently using an informal approach and eschewing formal planning procedures.

Furthermore, theories of spatial reconfiguration and urban transformation provide essential frameworks for understanding the dynamic interplay between migration and urban landscapes. Migration is the primary forces behind urban change, which reshapes urban areas through processes like infrastructure development, gentrification, and the formation of informal settlements (Brenner & Schmid, 2015). An empirical study conducted on “Migration and rural development in China by Mullan et al. (2011).found that migration from rural to urban areas decreases agricultural labor, but it also encourages the conversion of peri-urban land for industry and housing.

As the information gathered from the 395 sample respondents, the major drivers of LULCC in the study area identified as population growth, infrastructure development, environmental degradation and government policies. **Table 4.28** reveals the major drivers of LULCC in Woldia town.

Table 4.29. The main drivers of LULCC

Drivers	Frequency	Percent
Population growth	210	53.16
Infrastructure development	80	20.25
Environmental degradation	40	10.13
Government policies	65	16.46
Total	395	100

(Source: Field Survey, 2021)

Table 4.28 depicts that more than half of the respondents (53.16%) replied that LULCC in Woldia was driven by population growth followed by infrastructure development. The remaining 16.46 % and 10.13% were responded that government policies and land tenure systems respectively.

Population Growth and LULCC

The study finding reveals that population growth was the main drivers of LULCC in Woldia. This finding is consistent with Dewan and Yamaguchi (2009) who conducted an empirical study on “Land use and land cover change in Dhaka of Bangladesh” and they found that 70% of peri-urban agricultural land was lost to built-up areas as a result of population expansion (6% per year) between 1990 and 2005. In a similar vein, Grau et al. (2003) in their empirical study of "Urbanization and the loss of prime agricultural land in Puerto Rico." discovered that 40% of agricultural land was converted to urban uses between 1950 and 2000 due to urban population increase.

According to an empirical study done by Gashaw et al. (2018) entitled "Evaluating land use/land cover dynamics in the Highlands of Ethiopia using GIS and remote sensing," cropland expansion was driven by high population growth at the expense of grasslands and forests between the 1995 and 2015.. In addition, Seto et al. (2011) carried out a meta-analysis on the expansion of urban land worldwide, focusing on 95 countries. They found that the primary predictor of urban land expansion is urban population increase, with GDP growth acting as a secondary driver. Angel et al. (2021) observed in their study "The Anatomy of Urban Expansion in Sub-Saharan Africa" that between 2000 and 2020, infrastructure development lagged behind the high urban population growth, which caused the urban land area to rise more than twofold.

Infrastructure Development and LULCC

The other driving force of LULCC in the study area was the development of infrastructure. As the result depicts 20.25% of the sample respondents said that infrastructure development caused the land use patterns of the town. This finding aligns with Dewan and Yamaguchi (2009) who found that between 1990 and 2005, 70% of peri-urban agricultural land was lost due to the construction of highways and industrial zones in Bangladesh. Moreover, in their empirical investigation of the "Impact of China-Pakistan Economic Corridor (CPEC) infrastructure on land use/cover in Pakistan," Ahmed et al. (2020) discovered that 12% of rangelands and forests were fragmented by road and rail infrastructure between 2013 and 2018.

Furthermore in their empirical research on "The future of the Brazilian Amazon," Laurance, W. F., et al. (2001) discovered that road networks, such as the BR-163 Highway, boosted deforestation rates by 30–40% as a result of farming, logging, and settlements. In this regard, interview conducted with Mayors of the town, urban land manager and Cadastral offices of the municipality confirmed that the development of infrastructure in Woldia starting from 2008/09 onwards increased and converted the prime agricultural land at the rural periphery of the town. In this context, Baye (2009) in his empirical study on "The impact of urban expansion on the livelihood of peri-urban farm households in Woldia" found that the road resurfacing from Kombolcha to Woldia and Woldia to Gashena as well as within the town converted the land use pattern at the periphery. Fig.4.13 depicted that how road resurfacing of Woldia drive the land use pattern at specific location of Gonder Ber (left) and Mugad (right).



Figure 4.13. road resurfacing as driver of LULCC in Woldia

(Source: Baye, 2009,P.60)

Environmental Degradation and LULCC

The degradation of the physical environment can cause the LULCC of a given geographic area. As the finding shows 10.13% of the sample respondents replied that environmental degradation considered as the driver of LULCC. Regarding this, Herrmann et al. (2015) discovered in their study "Recent trends in vegetation dynamics in the African Sahel and their relationship to climate" that extended droughts and desertification resulted in lower agricultural productivity, which in turn caused farmers to abandon croplands and encourage the growth of shrubs. According to Hedges et al. (2018), an empirical study on "Deforestation and soil erosion in Haiti," farmers were compelled to remove additional forest areas for cultivation as a result of severe soil erosion brought on by deforestation, which decreased agricultural production.

Due to the removal of bare land to level the floor of a newly built home, the hillside of Ayisema at Adengure site experienced land degradation. Consequently, the local LULCC was modified. Bewket (2002) conducted study on "Land cover dynamics since the 1950s in Chemoga watershed, Blue Nile basin, Amhara Region of Ethiopia" found that Overgrazing and unsustainable farming reduced vegetation cover by 44%, increasing soil erosion and sedimentation. **Fig. 4.14** shows how environmental degradation altered the land use pattern of at Adengure site.

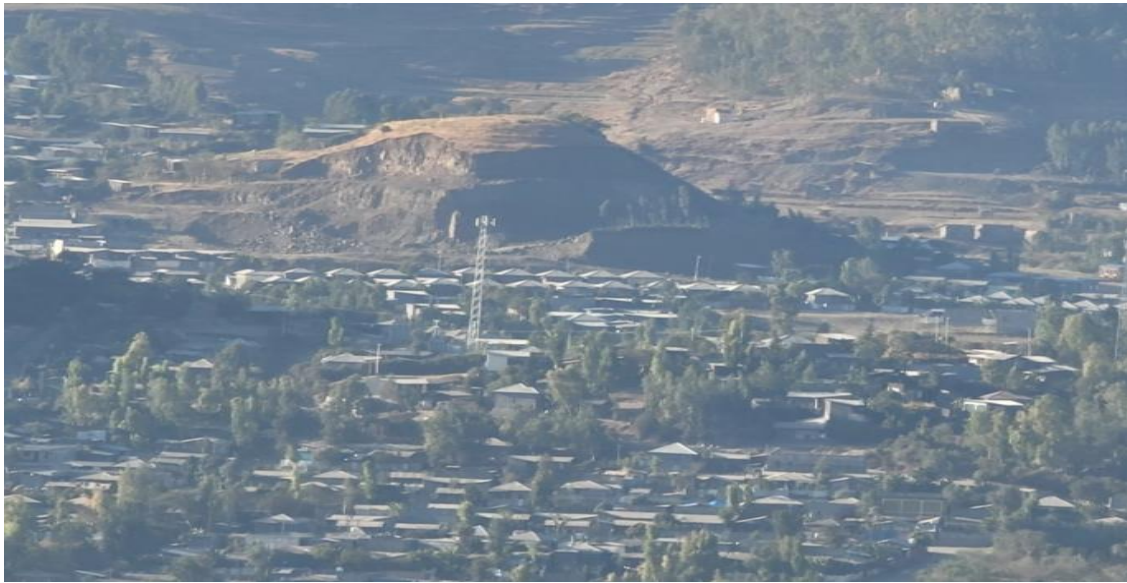


Figure 4.14. Environmental degradation at Adengure site of Ayisema
(Source: Field Survey, 2021)

Government policies

Another factor contributing to LULCC of an area was the reclassification of rural areas as urban areas by the governments administrative for various socio-economic developments. The finding of the study showed that 16.46% of LULCC was converted by government policies. In line with this the mayor and urban land manager of the municipality was interviewed and they confirmed that nearby rural lands are reclassified to urban areas for administrative purpose and maximizing the supply of urban land to accommodate the growing population land demand. This was applicable whenever the public interest is greater than the individual. As a result of this, the rural land use converted to urban landscape. In light of this, Hussein (2018) also stated that the government can reclassify rural land for "public purpose" projects under the 2005 Expropriation Proclamation, frequently favoring investors over local residents.

Moreover, Shaw and Saharan (2019) stated that the designation of peri-urban communities as "smart cities" resulted in the displacement of wetlands and farms. For example, the outer Ring Road project in Hyderabad in India transformed 7,000 hectares of agricultural land into urban areas. According to Ahmed and Ishrat (2020), the reclassification of rural areas as urban areas and the migration of people from rural to urban areas have been crucial in this regard because they have changed the rapid expansion of urban centers and continue to be a crucial link in the urban growth chain. Additionally, Montgomery et al. (2013) noted that political or administrative procedures are primarily responsible for the reclassification of nearby rural areas under urban administrative settings as a site of expansion to satisfy the demands of urban land for a variety of activities.

4.1.9.2 The Effects of Horizontal Spatial Growth on LUCC

Whenever there is spatial growth of urban areas, the conversion of agricultural land, deforestation, loss of biodiversity and engulfing of wetland areas are common. In this regard, Rabinson (2003) cited in Eyaya (2014) found that the loss of agricultural and forestland, as well as the expansion of concrete and impermeable surfaces, are some of the changes brought about by urbanization. It's important to understand these connections between human activity and its impact on the environment, especially in parts of the world that are changing quickly. Additionally, he discovered that the main reasons for the loss of fertile agricultural land the backbone of developing countries' economies are the primary cities and excessive urbanization.

Moreover, UN-Habitat (2020) reported that Sub-Saharan Africa and South Asia are two developing regions where rapid urbanization has resulted in LULCC, a strain on natural resources and infrastructure. In this context, Brenner and Schmid (2015) noted that the peri-urban areas where urban expansion carried out frequently hasten the transformation of natural or agricultural landscapes into residential and industrial zones. **Table 4.29** reveals the impacts of horizontal spatial growth on LULCC of the study area.

Table 4.29. The impacts of horizontal development of Woldia on LULLCC

Drivers	Frequency	Percent
Agricultural land conversion	180	45.57
Deforestation and habitat fragmentation	90	22.78
Loss of bio-diversity and ecosystems	80	20.25
Wetland encroachment and water scarcity	45	11.39
Total	395	100

(Source, Field Survey, 2021)

Table 4.29 shows that the majority of the respondents' 180 (45.57%) replied the growth of Woldia to the periphery of rural lands converted the prime agricultural land of the area followed by deforestation and habitat fragmentation. The remaining 20.25% and 11.39% of the respondents responded that loss of biodiversity and ecosystem, and wetland encroachment.

The finding of the study is consistent with Baye (2009) in his empirical works of the impact of urban expansion on the livelihood of peri-urban farm households in Woldia found that the horizontal growth of the town resulted in the conversion of 271.6 hectares of prime agricultural land from the surrounding hinterlands to urban land between 1993 and 2008/2009. In line with this, interview was conducted with the mayors and urban land manager of the town and they confirmed that the total area

of the town expanded to the rural periphery. As a result, agricultural land conversion was more visible at the hinterland where their livelihood was depending up on this.

The study aligns with Seto et al (2012) a study conducted by using satellite imagery and geographic modeling pointed out that because of urban growth by 2030 a substantial loss of agricultural land and natural habitats will happen. They also predicted that urban areas will increase worldwide, endangering biodiversity and raising carbon emissions.

According to Bodo et al. (2021), the quality of the habitat and ecological integrity are seriously threatened by the changes in land use and land cover (LULC) brought about by migration and spatial growth of towns. Farmland used for crop production has decreased, and habitat loss is the result of a complicated interaction and coupling process between land use/cover change and habitat quality. Konyango et al. (2021) also justified that because of unchecked land use change, which leads to land use disputes, incompatible land uses, unplanned developments, and unorganized land structures, the stability of peri-urban areas is seriously threatened.

Wetland encroachment and water scarcity is an indication of LULCC driven by horizontal growth of urban areas. The survey result reveals that 11.39% of this land use was converted by spatial growth of the town. In this regard, Dewan and Yamaguchi (2009) in the study of “Urban Expansion and Wetland Loss in Dhaka of Bangladesh using Landsat imagery from 1975 to 2003” found that, 76% of Dhaka's urban growth took place on floodplains and wetlands, disturbing hydrological cycles and making water scarcity worse during dry seasons. Furthermore, Reis et al. (2017) found that Florida's wetlands have been lost by 50% since 1900 due to urban and agricultural growth, which has reduced natural water filtration and increased the state's dependency on energy-intensive desalination.

4.1.9.3 Land Use/Land Cover Changes of Woldia Town (2000 to 2020)

The result classified image of Woldia town in 2000 presented in **Table 4.30**. According to this study, built-up, bare land, forest and agricultural land have a share of 10.9%, 27.1%, 22.8% and 39.2% respectively. In 2000, the highest and lowest proportion of land use and land cover type was agricultural land and built-up area respectively. This shows that the spatial growth of the town was limited at this period and located in the central part of the town. The majority of the land use pattern of the town was occupied by prime agricultural land followed by barren and forest land (see **Fig.4.15**)

Table 4.30 Land use land cover of Woldia town in 2000

LU/LC	Area (ha)	Percentage
Built-up areas	240.51	10.9
Barren Land	600.67	27.1
Forest Land	504.59	22.8
Agricultural Land	867.22	39.2
Total	2213	100

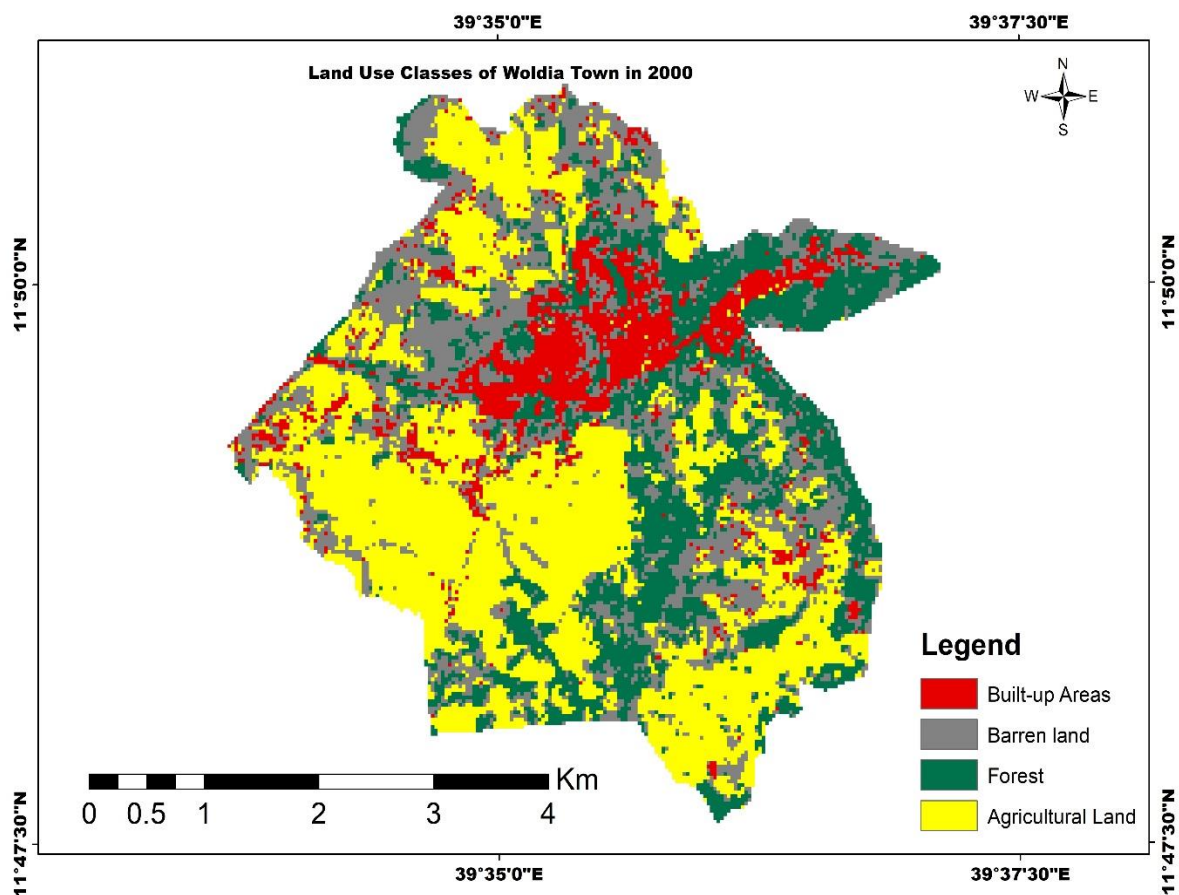


Figure 4.15. Land use land cover map of Woldia town in 2000

(Source: Field Survey supported by GIS, 2021)

The result of land use land cover map of Woldia town in 2010 shows that built-up and barren land had larger share of the total area of the town (**Table 4.30**). The built –up was increased from 240.51 (ha) which was in 2000 to 331.82 (ha) in 2010. This shows that within ten year interval 91.31 ha of land was consumed by the town for various socio-economic developments. The barren land also

increased from 600.67 9 (ha) in 2000 to 613. 83(ha) in 2010 and encroached 13.16 ha of additional land from the surrounding areas

Furthermore, the result depicts that agricultural and forest lands were declined. The agricultural land was declined from 867.22 ha in 2000 to 813.07 ha in 2010. It was declined by 54.15 ha of land within ten years interval. This implies that the prime rural agricultural land was consumed for different urban land use purposes. On the other hand, the forest land was declined from 504.59 ha in 2000 to 436.28 ha in 2010. In ten years interval, the forest land was declined by 68.31 ha of land. **Fig.4.16** illustrates that the town expanded horizontal in many directions on north, east, west and southern part.

Table 4.31 Land use land cover of Woldia town in 2010

LU/LC	Area (ha)	Percentage
Built-up areas	331.82	15
Forest Land	436.28	19.7
Barren Land	613.83	27.7
Agricultural Land	831.07	37.6
Total	2213	100

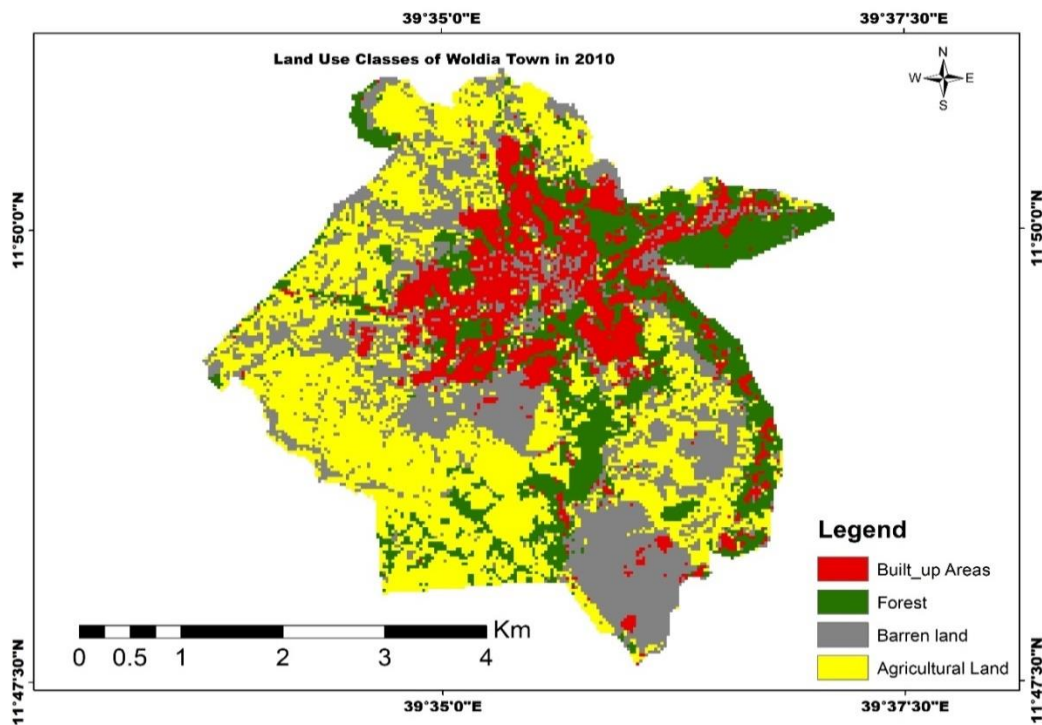


Figure 4.16. Land use land cover map of Woldia town in 2010

(Source: Field survey supported by GIS, 2021)

Table 4.32 reveals that the result of land use land cover map of Woldia town in 2020 indicates that the built –up areas were extremely expanded. It increased to from 331.82 ha of land in 2010 to 659.31 ha in 2002. This shows that within ten years interval 527.49 ha of land consumed to the rural periphery of the town. Forest land also increased from 436.28 ha in 2010 to 582.83 ha of land in 2020 within this interval of time, 140.55ha of land was incorporated. On the other hand,

Table 4.32 Land use land cover of Woldia town in 2020

No	LU/LC	Area (ha)	Percentage
1	Built-up Areas	859.31	38.83
2	Agriculture Land	389.82	17.62
3	Forest and open space	582.83	26.33
4	Barren Land	381.05	17.22
Total		2213	100

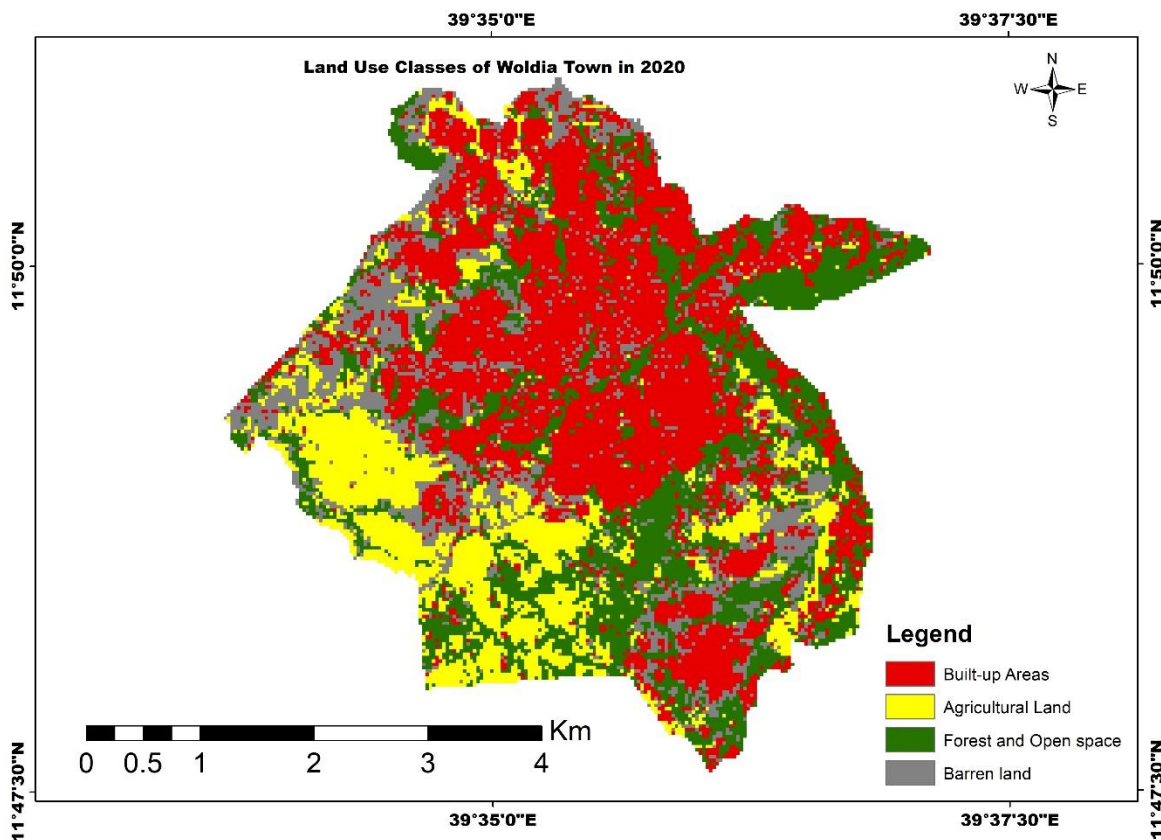


Figure 4.17. Land use land cover map of Woldia town in 2020

(Source: Field Survey supported by GIS, 2021)

4.1.9.4 Land Use Land Cover Change Analysis of Woldia (2000-2020)

Land use and land cover changes were analyzed with the start (2000) and end (2020) maps using a cross-tabulation matrix and post-classification methods. A change was considered positive or negative according to the transition from one land use and land cover category to another in the study period. Accordingly, the years 2000, 2010 and 2020 were compared using a change detection matrix. The annual rate of change for each class of LULC was calculated using the following formula proposed by Puyravaud. (2003):

$\Delta = \left(\frac{1}{t_2 - t_1} \right) \times \ln \left(\frac{A_2}{A_1} \right) \times 100$, where Δ is the change for each class per year, A_2 and A_1 are the class areas at the end (2020) and the beginning (2000) respectively, for the period being evaluated, and t is the number of years spanning that period (2000-2020).

To comprehend the evolution of various land categories, it is essential to analyze changes in land use and cover. Key informant interviews and satellite imagery from 2000–2020 revealed that, prior to the horizontal spatial growth; the surrounding areas of Woldia town's land was primarily utilized for agricultural purposes. Between 2000 and 2020, 859.31 hectares (38.83%) of land were purchased for a variety of socioeconomic development projects, including institutional, industrial, housing, and road infrastructure. Peri-urban farmland, forests, and bare land made up a large portion of the land acquired for horizontal spatial development, according to satellite imagery (**Fig. 4.15**).

Table 4.33. The land use/land covers change analysis of Woldia (2000–2020).

Land Use Land Cover Classifications and change analysis of Woldia (2000-2020)								
land use type	2000		2010		2020		Change (2020-2000)%	Annual Rate of Change (2000-2020) %
	Area (ha)	%	Area (ha)	%	Area (ha)	%		
Built-up	240.51	10.9	331.82	15	859.31	38.83	27.93	+6.35
Agriculture	867.22	39.2	831.07	37.6	389.82	17.62	-21.58	-3.995
Forest land	504.59	22.8	436.28	19.7	582.83	26.33	3.53	+0.71
Barren land	600.67	27.1	613.83	27.7	381.05	17.22	-9.88	-2.275
Total	2213	100	2213	100	2213	100		

(Source: Field Survey and computed from land cover map, 2000-2020)

The land use patterns of Woldia town have changed significantly between 2000 and 2020, based on satellite imagery. This is because land has been acquired for built-up areas, particularly for the construction of housing. **Table 4.33** shows that the built-up area expanded from 240.51ha in 2000 (10.9% of the total area) to 331.82 (15%) in 2010 and 859.31 ha (38.83%) in 2020 due to rapid

urbanization, housing development, and other construction activities over time, while agricultural land decreased from 867.22 ha (39.2% of the total area) in 2000 to 831.07ha in 2010 (37.07%), and 389.82 in 2020 (17.62%). This has happened as a result of the town's horizontal growth encroaching on valuable agricultural land.

Likewise, the forest cover also declined from 504.59 ha (22.8% of the total area) in 2000 to 436.28 ha (19.7%) in 2010, with a minor increase of 582.83 ha (26.33) in 2020 due to afforestation programme carried out at this period as the information obtained from key informant interviews of urban land managers of the municipality. This suggests that the amount of forest cover is declining significantly between 2000 and 2010. It is primarily used because most housing developments in the town recently rely on wood trees as a raw material, which encourages tree cutting and accelerates deforestation.

Additionally, bare land decreased from 600.67 ha (27.1%) of the total area in 2000 to a modest increase of 613.83 ha (27.7%) in 2010. This was the time that the town administration's encroached four rural kebeles, which increased the amount of bare land. In 2020, it decreased in 381.05 ha (17.2%). This result indicates that the amount of bare land has declined over time as a result of Woldia's growth.

This result is consistent with Eyaya (2014) on "the impact of urban expansion on agricultural land, used a remote sensing and GIS approach in Gondar city 1966-2004," Fenta et al. (2017) on the "dynamics of urban expansion and land use/land cover changes using remote sensing and spatial metrics in Mekelle City 1984-2014," and Eniyew (2018) on the "effects of urban expansion on the surrounding land use using GIS and Remote Sensing in Debre Tabor town 1984-2016." These empirical studies were conducted in Ethiopia and revealed that the horizontal spatial growth of urban areas consumed more agricultural, forest, and grass lands at the periphery, which in turn caused built-up areas to expand to the fringes.

Furthermore, the results demonstrate that, for example, in Gondar, 113.32 km² of agricultural land were transformed for urban expansion purposes between 1966 and 1999, and between 1999 and 2004 106.26 km² in 13-year and 5-year interval, respectively. Comparably, in Mekelle City, between 1984 and 2014, the conversion of agricultural areas accounted for almost 88% of the built-up area and agricultural land declined to 39%. In the city, extension of existing urban areas was the most common kind of growth in the city, accounting for 54%, 75%, and 81% of all new development between 1984 and 1994, 1994 and 2004, and 2004 and 2014. In Debre Tabor town, the study found that the amount of agricultural land decreased by 23.81% while the amount of built-up area increased rapidly by 89.3%. In the same period, open land decreased by 65.02% and forestland decreased by 36.07%. This

suggests that the town's built-up area grew horizontally at the expense of open, agricultural, and forest regions. Based on what has been discussed so far, we can say that Ethiopia's urban areas are growing at the expense of the rural areas by consuming a significant amount of the country's agricultural, forest, and open land areas.

This finding is also consistent with Nikko et al. (2020) conducted an empirical study on “Analyses of land use land cover (LULC) change and built-up expansion in the suburb of a metropolitan city of Delhi of India” noted that steady increases in open and fallow land and built-up areas, along with a decrease in agricultural and forest land, have resulted in substantial changes in LULC. Furthermore, key informant interviews conducted with Mayors and urban land managers and they confirmed that agricultural land in Woldia's peri-urban districts was taken away for various socio-economic purposes including for the construction of housing, infrastructure, and industrial zones.

The study of the rate of LULC change is useful for understanding the effects of the conversion of peri-urban land for built-up areas, particularly for housing development, as **Table 4.33** demonstrates. During the three research periods, the LULC analysis revealed significant changes in the dynamics of land use/cover, and built-up areas have grown significantly, increasing by an surprisingly 27.93% between 2000 and 2020. This rapid growth is an indicator of growing urbanization and population because it represents significant infrastructure expansion and housing development, while farmland drastically decreased to 21.58 percent between 2000 and 2020.

The considerable loss of agricultural land as a result of the increase of built-up areas brought about by housing development and other projects is demonstrated by the overall reduction of 21.58% between 2000 and 2022. There was a consistent decline in forest cover across the study period, with the exception of 2020. The decrease of 0.15% from 2000 to 2010 and the minor increase of 0.29 percent between 2010 and 2020, as well as the total growth of 0.71% between 2000 and 2020, show that pressures to limit deforestation are still necessary (**Table 4.33**). According to key informant interviewees from the town's mayors and urban land managers, built-up areas significantly increased as a result of peri-urban land acquisition for housing development and other infrastructure projects fueled by population growth, while farmland and forest cover declined between 2000 and 2020.

As the population grows, it is evident that infrastructure and housing must be developed, which frequently results in the conversion of agricultural land for various socioeconomic purposes. According to Wang et al. (2021), there has been a steady rise in built-up land and a decline in agriculture, which is in line with this result. As a result, more than 90% of the added built-up land

was an encroachment on Chinese farmland in Shandong province. In comparison to Woldia town, this percentage is much higher.

According to a prior study like Wang et al. (2021), built-up land accounted for 46% of farm land globally out of the total amount of built-up land rise. In contrast, built-up land accounted for 38.83%, 58%, 64%, 24%, and 29% of the land used for Woldia, China, Europe, the USA, and Africa, respectively. The rate at which agricultural land in Woldia town is being converted to built-up areas is 38.83%, which is even higher than the rate at which African land is being converted to built-up areas (29%). From the land use change analysis in **Table 4.33** revealed the annual rate of change for built up increased by 6.35%, agriculture declined by 3.99%, forest land slight increased by 0.71% and the barren land declined by 2.28%

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The continually growing number of people living in urban areas around the world is a hallmark of urbanization, a phenomenon that defines the twenty-first century. Migration, especially rural-to-urban migration, is at the core of this change and is a major factor in both demographic transitions and spatial growth. This tendency is particularly noticeable in emerging countries, as migration changes the urban environment, modifies socio-economic dynamics, and affects growth patterns. A compelling illustration of how migration leads to these changes is provided by the Ethiopian town of Woldia. Due to migration, Ethiopian towns have been growing extremely quickly in recent years. Development in Ethiopia in general and Woldia in particular is impacted by migration, both in rural and urban areas. According to the study results, Woldia town has recently faced significant continuous challenges of the horizontal spatial growth driven by migration

Age and sex were shown to be important factors in determining migratory patterns, and there was a discernible change in the age distribution of migrants before and after relocation, according to the study's findings. This pattern of migration is in line with Ravenstein's law of migration theory (1885), which postulated that migration is a process that is selective for sex and age. 88 (72.73%) of the female travelers and 217 (79.2%) of the male migrants in their sex category were at the height of their output between the ages of 25 and 44. According to the research, migration is gendered and age-specific, which affects social cohesion, economic productivity, and labor supply in both the origin and destination regions.

A total of 163 (59.49%) of the migrants to the town were males from rural areas. Additionally, 259 (65.57%) of married migrants who came to Woldia had finished formal education, mainly secondary or higher education, according to the results. Education is a major component that draws migrants to the area. According to the results, education level also has a higher chance of affecting migration decisions. Consequently, in search of greater opportunities and a higher standard of living, educated people are more prone to move from rural to urban areas. This result is consistent with Teye (2018) and Berisso (2023), who show that as people migrate to cities in search of better chances and prospects, the likelihood of migration increases with educational attainment. Overall, the study clarifies how education, religion, work position, and location of birth influence migration trends and destination preferences. These demographic and socio-cultural elements affect people's migration choices and have wider ramifications for employment development, urban planning, and social integration programs.

The study's findings also indicate that 209 (86.72%) of the 241 employed migrants had permanent positions in the public sector. Woldia town attracts migrants from the surrounding intraworedas in the zone, both rural and urban. Stated differently, 194 (49.11%) of the migrant stream that entered the town were short-distance migrants, identified by their stepping and coordinated movements as they followed each other. Accordingly, in his theory of the law of migration, Ravenstein (1885) claimed that the number of individuals moving from their place of origin to a certain destination falls as the distance between them rises.

Migration is the main driver of the rapid horizontal urban expansion from the urban center to the periphery, which accounts for the majority of urban population growth in most developing countries, including Ethiopia. In line with this, Adam (2014) noted that a significant amount of land from nearby peri-urban areas is needed for residential and other urban uses because of the significant and ongoing urban population increase driven by migration. This study examines the role of migration dynamics in shaping urban expansion in Woldia, showing how push-pull and other related factors such as rural land reclassification and natural population growth enhanced the migration of people to urban areas, and this in turn led to accelerate urbanization by booming the population growth of the town. The results show that these factors have caused significant horizontal expansion, with urban development encroaching on adjacent rural lands, which has exacerbated competition for resources, put a strain on existing infrastructure, and presented challenges for sustainable development.

The study pinpoints several causes of migration. People are driven to leave rural areas by push factors such as land scarcity, poverty, and poor rural infrastructure. On the other hand, pull factors—like better job opportunities, easier access to better social amenities, and the allure of better metropolitan settings—lure people to urban areas. Interestingly, the two most important pull factors are access to superior social amenities (28.45%) and employment prospects (19.30%). In order to properly govern growth and encourage balanced development, these dynamics highlight the necessity of focused interventions.

The study emphasizes how crucial it is to implement integrated solutions that address urban and rural inequities in order to address these issues. In order to promote rural development, policymakers and urban planners must simultaneously employ sustainable urban management techniques and enhance infrastructure and services. In order to accommodate growth while protecting valuable rural lands, investments in peri-urban areas are crucial. Long-term socio-economic and environmental sustainability as well as easing the acute stresses of urbanization depend on these actions.

The development of Woldia town benefits from migration since it provides a robust labor force, but there are drawbacks as well, such as gender inequality and a lack of agricultural labor in the areas where migrants come from. In order to successfully manage migration, minimize adverse effects, and capitalize on the potential advantages for sustainable development, policymakers and stakeholders must have a thorough understanding of these dynamics.

The study found that the effects of migration and remittances on migrant sending households can differ. Remittances and migration are, in fact, crucial to the sending household's in achieving the goal of social and economic sustainability. Remittances are essential in ensuring that migrants' families have the capacity to save and engage in productive investment, building new house and renovating the existing one in one way. The finding of the study shows that the motives behind migrants sent money home was not the same. The main determinants basically categorized as individual and household level. The formal and informal channels were used by migrant to send money to their family home. Even though, the formal channels used by the migrants were dominated (52.68%), the informal channel (36.59%) was also used by the migrants.

A variety of factors, such as the recipient's and household members' socio-economic status, the amount and type of economic activity in the host country, the exchange rate, the cost of remittances, and the relative efficacy of formal versus informal channels, influence the decision to send money through formal or informal channels. The finding of the study reveals that migrants pointed out that the main challenges to use the formal way that weak financial institution, high cost of formal channels, accessibility and flexibility, and cultural and social ties.

The finding also shows that there were positive and negative effects of remittance driven urban growth to home areas. From positive side, remittance is played a critical role in savings and productive investment for migrant households, have a big impact on purchasing patterns and frequently raise living conditions and migrant household members were used the remittance for developing new houses and renovating the existing one.

Despite remittance has a positive driving for the growth of urban areas in the home area, it had a negative impact. Migrant households frequently purchase more land for dwelling, farming, or speculative investment as a result of remittances. By providing funds for infrastructure, commercial development, and residential growth, remittances have an impact on urban land use and frequently change the face of urban areas. As result, remittance contribute to the growth of informal settlements by supporting unplanned housing in places with little land tenure security, infrastructure, or regulatory monitoring. This is true in the peripheral area of Woldia recently.

The finding of the study depicted that 36.10% of the respondents replied that inflow of remittance induced to demand on urban land. These land purchases were frequently speculative, with the goal of profiting from future urbanization. As a result, financial stability and formal land markets were unavailable and the prime agricultural lands become declined. The conversion of agricultural property to non-farm, commercial, or residential uses is often financed by remittances. Migrant households bought peri-urban parcels converted agricultural land in to different urban uses and this in turn led to sprawl and a reduction in open spaces. The study also found that the growth of the migrant population and the increasing amount of money that returns home as a result, remittances are expected to continue to support further land changes and affect the livelihoods of individuals who rely on that land

Through the use of satellite remote sensing, Geographic Information System (GIS), interviews, and personal observations, the study area demonstrates how horizontal spatial growth into peri-urban areas threatens the livelihood of farming communities by reducing agricultural activities and sharply reducing agricultural land. Furthermore, a land use and land cover map of Woldia town from 2000 to 2020 reveals a drop in agricultural, forest, and barren lands along with an increase in built-up areas. As a result, Woldia's built-up area increased from 240.51 hectares in 2000 to 859.31 hectares in 2020 at the expense of other lands and agriculture. According to the study's findings, the town's horizontal growth brought on by migration and other contributing factors causes urban built up (settlement area) to encroach other available areas. As the three research periods (2000, 2010, and 2020) of the LULCC map plainly showed, Woldia town has been rapidly expanding horizontally to the periphery.

The study's conclusions have wider ramifications for both African and global contexts, providing insightful guidance for areas facing comparable difficulties. A sophisticated grasp of the relationship between urban growth dynamics and migratory drivers is necessary for effective migration management. Development may be balanced and urban growth can be managed sustainably with the support of cross-sector cooperation and strategic planning based on solid data.

To sum up, migration from rural to urban areas is a major factor in the population growth and spatial expansion of urban areas, with significant effects on infrastructure, resource management, and socio-economic stability. Urban areas' encroachment on rural regions, as observed in Woldia, highlights the pressing need for concerted efforts to alleviate the stresses of growing urbanization. Building on these findings, future studies should investigate knowledge gaps and improve policy recommendations to support sustainable urban growth. A proactive, evidence-based strategy will be

essential as urban centers expand globally to guarantee that urbanization enhances social justice, economic prosperity, and environmental resilience.

5.2 Areas for Future Study

There is a lack of studies focusing on medium-sized towns in relation to migration dynamics and horizontal spatial growth in most developing countries general and in Ethiopia in particular as empirical studies depicted. Therefore, future study should focus more on this area to minimize the impacts of horizontal growth towards the periphery. Moreover, the role of migration in shaping horizontal growth in medium sized towns in future study should examine in relation to loss of agricultural production in Ethiopia because this was where much of the horizontal development took place at peri-urban areas of the country.

This study has focused more on migration dynamics and horizontal spatial growth with a particular reference of Woldia town. However, future study should investigate the experiences of migration dynamics and urban expansion to large portion of urban areas in Ethiopia since the expansion rate of urban centers in the country is at alarming as the findings depicted. Furthermore, the consideration of remittance and its role in shaping horizontal growth is identified as one of the findings of this study. However, the researcher recommended in the future this topic should be studied independently to address its impact on the growth of urban areas in the country. The main drivers of migration (economic, environmental, social and political factors), and their implication on horizontal growth studied in separate sub- topic. However, there is a need for future study on these factors in multidimensional way.

Furthermore, the researcher suggested the following areas for future study which was not fully addressed in this study: 1) Infrastructure and planning: examine how migration-driven growth impacts urban planning methods and demands infrastructure such as roads, utilities and consider how transportation networks support peripheral settlement. 2) Environmental sustainability: examine how horizontal growth affects the environment, including loss of agricultural land and the pollution. 3) Migration and climate Change: examine environmental push factors (such as soil deterioration) that are causing migration to Woldia and evaluate the dangers of residing in environmentally susceptible areas like slopes and floodplains. 4) Informal Settlements dynamics: mapping the expansion of informal settlements, examine how they are incorporated into official urban systems, and look into issues with water and sanitation in places where migrants predominate.

5.3 Recommendations

It has become a major concern for academics, policymakers, governments, and non-governmental organizations in Ethiopia in general and the study area in particular as the role of migration in shaping the spatial growth of urban centers has expanded quickly in recent years due to a number of variables. The following recommendations are therefore offered in light of the study's findings.

- There was a difference in the socio-economic growth of rural and urban areas. To meet demand, governments at all levels should increase employment opportunities, enhance the environment, provide basic social services, and upgrade infrastructure in both urban and rural areas. Additionally, the government ought to create and implement a balanced program for rural and urban growth. Also, to make sure that policies represent their interests and needs, migrant groups, civil society organizations, and local communities should actively participate in planning and decision-making.
- Promoting socio-economic opportunity is necessary. Improving socio-economic possibilities in both rural and urban regions should be the main goal of efforts to address the underlying reasons of migration. To provide workable alternatives to migratory demands and priorities, this may entail funding agricultural development, employment creation, and entrepreneurship projects. .
- A significant number of people from the surrounding woredas moved to the town in search of improved employment opportunities and social amenities. Therefore, instead of focusing the many components of social amenities in a small number of urban centers, the government should give a variety of social services, including as health, education, and power and water services, to the rural areas in order to reduce the amount of rural-urban migration.
- Numerous difficulties that migrants have been illustrated in the study area. To address the problems of unemployment, overcrowding, poor infrastructure, the rise of slums, housing issues, and the scarcity of water, the town's administration and government must act immediately. The government should work with private groups and development agencies to speed up service delivery in order to solve these issues.
- To effectively respond to the town's spatial growth with its expanding population, town administrators and urban policymakers should be better equipped to handle migrants at their destination.
- The existing spatial growth of the town has an impact on the loss of agricultural land at the periphery. To this end, municipal planners and urban policymakers should employ vertical expansion of urbanization, which minimizes the loss of prime agricultural rural land at the periphery.

- The current spatial growth of the town has an impact on the loss of agricultural land at the periphery, so policymakers should implement effective urban management and sound rural development strategies (providing rural job opportunities and basic social amenities) to close the development gap between urban and rural communities. Municipal planners and urban authorities should use vertical urbanization expansion to achieve this.
- To increase the varied socio-economic growth, the local and regional governments should establish an infill strategy on open floor spaces in the town center rather than encroaching on the rural periphery.
- In Woldia town, migration and horizontal spatial growth are unavoidable phenomena. The town's physical areas and population will increase as a result. Therefore, planners and policymakers at the local, regional, and national levels must have a thorough understanding of the dynamics of the growth occurring in order to effectively support migrants. Furthermore, in the context of fast urban population growth, effective urban expansion planning should be employed to build inclusive, productive and orderly urban areas by allowing space for additional urban inhabitants at the appropriate scale in places where migrants are likely to dwell.
- Informal channels were used by migrants to transfer money to home area because of high charges of the formal channels. Hence, in order to facilitate remittance flows and reduce transaction costs, the government must establish an international remittance network. This will be accomplished by creating competition and increasing knowledge of the several alternatives accessible to remittance senders and recipients. While financial instability has led to nearly 75% of remittances being sent by migrants through informal channels in some remittance-receiving regions, most notably Sub-Saharan Africa, efforts like these, combined with better monetary policy and exchange rate stability, have helped reduce the size of the informal remittance sector in Ethiopia in general and the study area in particular.
- Even if remittance flow to the study region provides advantages, it also has drawbacks, like the expansion of informal settlements and the encroachment of agricultural land. Therefore, in order to control the town's sprawl development, the local and regional governments should enact the necessary legislation and planning.
- The study of LULCC map clearly showed that horizontal development of Woldia has a detrimental effect on the surrounding agricultural and other urban lands. Hence, to lessen the detrimental effects of urban development on society and the environment and to encourage equitable and sustainable urban development, it is critically necessary to implement sound municipal policies that regulate or

target urban development toward particular areas. This policy could be created by bolstering the current local plan, which is a comprehensive map and written statement that outlines the proposed use and development of land in a given area. This would encourage public participation to help oversee the impact of the development plan's implementation on the local communities as well as to facilitate plan approval. Such measures would guarantee that issues essential to communities' livelihoods.

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From origin to destination: examining the effects of migration on Woldia's growth and surrounding migrant sending areas in Ethiopia

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Abstract Migration affects development in both the rural and urban areas. This has been a major challenge in Ethiopia's development in general and Woldia's urban growth in particular. Therefore, this study examines the effects of migration on migrant sending and receiving areas of Ethiopia, by considering Woldia town and its surrounding areas as a case study. To achieve the study objectives, data were collected from a randomly selected sample of 395 respondents using questionnaire. Focus group discussions and key informant interviews were also employed along with the survey. Secondary data sources were also used. Both qualitative and quantitative data analysis was employed. The result showed that there was socio-economic development gap between rural and urban areas. The findings also revealed that the majority of migrants were of rural origin, traveled

short distances, and they were male in the age group of 25–44. To this end, migrants have faced challenges with social services and employments at destination in one hand, and decline of labour force and productivity at the origin on the other hand. Hence, in order to address the challenges, the study suggests that government interventions should be made to provide jobs, basic social services and infrastructure facilities to both rural and urban areas.

Keywords Area of origin · Area of destination · Migration · Migrant · Ethiopia · Woldia

Introduction

Migration is defined as the demographic process of people moving on a permanent or quasi-permanent basis from one environmental area to another, depending on their needs or preferences (Keefelegn, 2020). Human migration is a phenomena and one of the elements of population dynamics that are influenced by demographic and socio-economic changes (Ketema & Diriba, 2021). Hassan et al. (2020) stated that migration is a worldwide phenomenon, and both push and pull factors are responsible for this. Moreover, poverty, lack of health care, lack of job opportunities, lack of educational opportunities, and adverse circumstances are some of the push factors that cause individuals to migrate to a particular area. On the other hand, there are factors that pull rural people

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to urban areas, such as improved access to health-care and education, better job opportunities, brighter futures for their children, and many more.

Since the beginning of human history, migration has played a crucial role in human dynamics (Faist, 2016). Moreover, in recent years migration has become one of the topical issues of discussion among politicians, policymakers, media, and people living in developed and developing countries more than any time in human history (Zerihun, 2020). In line with this, Badolo (2020) asserted that migration is a complex issue that has drawn the interest of many governments and policy experts.

Urbanization is defined as the progressive growth in the percentage of a population living in urban areas and the corresponding decrease in rural areas. This process is intricate and includes shifts in politics, economy, culture, and demography. Two of the most important demographic trends of our time are migration and urbanization. People are migrating from rural areas to urban centers more frequently in search of economic possibilities and better standard of living as cities expand and economies become more integrated (Adesegeha & Omotayo, 2023). However, the socio-economic growth of migrant sending and receiving communities are challenged by urbanization and migration process though the extent of the effects varies.

According to Jedwab and Vollrath (2015), migration plays a major role for the development of urban areas. At a remarkable pace, the world is becoming more urban. An additional 2.5 billion people are predicted to live in urban centers globally over the course of the next 30 years as a result of people moving from rural to urban areas and global population growth. Around 90% of this change is expected to occur in developing nations, mainly in Asia and Sub-Saharan Africa (DESA, 2019 cited in Brewer et al., 2024).

Rural–urban migration has been a major driving force in urbanization process globally. It played a major role in the urbanization process of developed and developing countries (Lall et al., 2006). Kefelagn (2020) also stated that the unprecedented levels of urbanization in most developing countries have resulted in the movement of people from rural to urban areas subsequently resulting in the emergence of slums and informal settlements.

Even though both Africa and Asia are predicted to have average annual rates of urbanization of about

1.1%, the percentage of their populations who live in urban areas is predicted to reach 58.9% and 66.2%, respectively, in 2050 (UN, 2018 cited in Bocquier et al., 2023). For instance, in sub-Saharan Africa, urban population was growing at 4% between 2015 and 2020, and expected to grow at 3.7% between 2025 and 2030, while in Eastern Africa, the figures were 4.5% for 2015–2020 and projected to grow at 4.2% for 2025–2030 (United Nation, 2018). This indicated that countries in Eastern Africa in fact are experiencing significantly higher growth rates of urban population than the African average.

A combination of economic, social, political, demographic, and environmental factors are driving migration, which is primarily responsible for Africa's rapid urban population growth. According to Teye (2018), in certain nations, the movement of individuals from rural to urban areas in pursuit of employment is primarily responsible for approximately 60% of the growth in urban areas. This is because of development disparities between rural and urban regions. In this regard, Awumbila (2017) also noted that migration plays a crucial role in the urbanization process and expansion of Africa, as individuals relocate in pursuit of better social and economic prospects, as well as to escape environmental degradation.

Internal migration is more persistent in developing nations. Ethiopia one among the developing nations is depicted a comparatively elevated degree of internal migration and population redistribution. Between 1994 and 2007, the average annual growth rate of Ethiopia's urban population was 3.8%, while its rural population was 2.3% (Mitiku & Mulatu, 2021). Considering its level of urbanization, Ethiopia is the least urbanized country as compared to most of African nations (Ketema & Diriba, 2021). However, the country's rate of urbanization is the fastest in sub-Saharan Africa, despite it has low level of urbanization. This trend is anticipated to continue in the up-coming years. According to Mitiku and Mulatu (2021), the rate of urbanization in Ethiopia between the year 2015 and 2020, is estimated on averaging 3.9% compared to the projected average growth rate of 3.1% for Africa.

According to United Nations world population prospects (2019), the urban population of Ethiopia living in urban areas in the year 2019 was 21.2%; and this number is projected to increase to 40% by 2050. The Central statistical Authority (CSA) of the country

is also projected that the proportion of urban population of the country increased from 13.8% in 1994 to 16.1% in 2007 and this is expected to rise to 30.6% in 2037 (CSA, 2013). To this end, internal migration, particularly net migration to urban areas is the driver of high rate of urbanization in the country (Ketema & Diriba, 2021). In Ethiopia, the majority of existing urban centers are concentrated at the lower end of the urban hierarchy, which presents a chance to minimize and protect externalities such as urban crowdedness (Ermias et al., 2019).

Woldia town has seen one of the fastest rates of urban population growth in the country as a result of rate of natural increase and migration. According to the CSA (2007), the annual growth rate of the town was 4.11% and this rate is increased to 7.04% in the year 2020/21 as data obtained from Woldia Woreda Health Department. In this regard, massive rural–urban and urban to urban migration mainly from the nearby small towns and rural woredas have resulted in increasing the population size of the town. For example, the result of the 1994 population and housing census of Ethiopia showed that the total population of Woldia was 24,533. Out of these, the migrant populations' accounts 11,325 and which is about 46.16% of the total population of the town. Similarly, the 2007 population and housing census of Ethiopia revealed that of the total 46,139 population of Woldia, 19,363 (42%) were migrants (CSA, 1994, 2007).

Moreover, migration data obtained from Woldia Woreda Health Department confirmed that in the year 2020/21, the total urban population of the town was 89,707. Of these, 49,887 or (55.61%) of the populations were entirely migrant. This implies that migration is one of the basic components for the current population growth of the town. This is mostly due to the socio-economic status of the town, its advantageous location along the Addis Ababa–Mekele main route as well as its role as a nodal center for the tourist sites of Lalibela, Bahir Dar, Gondar, and Afar regions. Besides, the newly established Woldia Teachers' College and University, and the availability of other better social services are attracting more migrants to the town.

Migration has both positive and negative effects on sending and receiving areas in Ethiopia in general, and Woldia town in particular, despite the fact that the underlying causes and effects vary at origin

and destination areas. In this context, Habtamu (2015) noted that at the place of origin the positive effects of migration include remittance flow, lower rural unemployment, and less depletion of natural resources. The negative effects of migration include a labor force shortage, decreased agricultural productivity, gender imbalance, family separation, and rural depopulation. On the other hand, destination communities' benefit from supply of labor force, cultural diversity and cohesion, and strengthens the local economy. Migration also causes strain on social facilities, enhance population pressure and increased land demand in receiving areas.

Researchers, like Belay (2011), Miheretu (2011), Habtamu (2015), Wondimagegnu (2012), Ermias et al. (2019), Kefelegn (2020), Zerihun (2020), and Mitiku and Mulatu (2021) have done studies on migration in general and rural–urban migration in particular in different parts of Ethiopia. Most of them focused on the causes and consequences of rural–urban migration. However, the effects of migration on towns' growth from origin to destination in Ethiopia were not studied well. Moreover, the problems studied by the above scholars are location-oriented that could be approached differently with different solutions.

Therefore, this study is intended to fill the gap that other studies did not capture. To this end, the specific objectives of the study include (1) to analyze the demographic changes on both sending and receiving areas, including marital status, age structure, and gender distribution; (2) to assess the socio-economic effects of migration on both sending and receiving areas, focusing on changes in employment status, type, local economic development, and aspects such as family dynamics, social cohesion, and cultural integration. This study can offer a significant insight for academic research and also guide policy-making and practical applications.

Empirical review on impacts and implications of migration at place of origin and destination

Positive implications on the place of origin

Migration has its own benefits and drawbacks (Withers, 2019). On a positive side, it can influence the migrants to generate remittances and send back the money to their families at the origin. In this regard,

Ahmed et al. (2016) stated that migration and remittances have an impact on the welfare of the population in the countries that send migrants, both directly and indirectly. Additionally, his literature asserted that the impact of remittances on asset accumulation varies based on the type and amount of remittances as well as the recipient households' geographic and economic circumstances.

According to Hagen-Zanker (2015), in his study of the effects of remittances and migration on migrant-sending countries, remittances from migrants and migration itself help rural farmers in developing nations to reduce risk and overcome financial barriers, enabling them to more readily adopt farming innovations. In line with his argument, migrants use their ideas, values, income, and skills to invest in land, buy cash inputs for agriculture that lead to better cultivation practices and higher yields, purchase agricultural machinery or implements, and fund their education which enable them to generate income outside of their farm.

Empirical research conducted in Ethiopia confirmed the significant impact of remittances on the poor rural population's livelihood. For example, Wondimagegnhu (2012), in his study of the economic effects of rural–urban migration, found that remittances from migration increase the amount of capital stock, particularly in households that send short-term migrants as opposed to non-migrant sending households. This makes the households self-sufficient and permits them to increase the amount of money they invest in enhancing the well-being of their families.

In addition to transferring money in the form of remittances to their area of origin, migrants also transferred knowledge, skills, and capital. In line with this, Obani and Odalonu (2023) noted in their study, "Impact of Rising Migration on Socio-Economic Development," stated that migration involves the transfer of financial assets (including remittances), know-how, and skills for the individual family, household, society, economy, and development as a whole.

Negative implications on the place of origin

Migration negatively impacts the area of origin by slowing down the growth of population in the form of depopulation (decline of population because of migration) and labor force. In this context, Grau and Aide (2007) claimed that young people, especially

males, are typically employed in labor-intensive jobs in rural areas in order to support their families. When the working-age individuals depart from their parents due to migration, they can have detrimental effects on their family's well-being and can slow down the local economy. In line with this, Eshetu et al. (2023) asserted that rural out-migration reduces human capital and agricultural output in the areas of origin, which has a negative effect (loss of labor force) on the welfare of households that send migrants. As a result, migration involves giving and taking rather than being in a vacuum in the migrant-sending areas. This indicates that migration offers remittance and other benefits on the one hand; it reduces labor forces and agricultural productivity on the other hand.

Poston and Bouvier (2010) also stated that the reproductive potential of the population at origin is likely to be reduced due to people who migrate to urban areas tend to be of young childbearing age. Miheretu (2011), in his study of the causes and consequences of rural–urban migration found that there was a higher concentration of older age groups in the sending rural areas, which could indicate a lower fertility rate. To this end, the migration of a young productive labor force to cities that were economically dependent leave old age population behind and a decline of rural productivity.

Migration also affects that migrant's to lose their lifestyles, customs, and culture that they had at the place of origin and forced to assimilate to the new urban settings. In this regard, Belay (2011), in his study of push and pull factors of rural–urban migration and its implication on the place of origin highlighted that when people migrate from rural areas to urban areas, they are adjusting to a new environment with new physical layout and culture. They would lose their traditional culture where they lived as a result of their interactions with people in the urban area.

Migration also poses challenges on social structure and emotional costs to migrant-sending communities. In line with this, Baby and Basheer (2024) concluded that communities with high emigration rates face numerous challenges to their social systems as a result of migration. The families of migrants may experience disruptions as a result of one or more family members being gone for extended periods of time. These absences may have a negative impact on conjugal relationships as well as parent–child

relationships. In his studies, he also stated that migration has the power to fundamentally change family structures, community norms, and traditional gender roles. As a result, women take on additional responsibilities when their husbands migrate, and when they return, they might not want to give up their new role. D'Emilio et al. (2007) also noted that moving to a new location and being separate from one's close family comes with a significant emotional cost.

Positive implications on the place of destination

Destination areas may benefit economically from migration. Berisso (2023) stated that the economic benefits of migration for the destination areas stimulate the demand for basic goods and increase the labor force supply, which in turn boosts employment and production, and thus benefits the local economy. McAuliffe and Oucho (2024) also confirmed that migration can have a positive effect on the labor market by increasing labor supply in sectors and occupations experiencing worker shortages in urban areas. As a result, it assists in addressing mismatches in the job market. According to their study, these positive labor market effects might arise in lower-skilled jobs as well as high-skilled sectors.

Migration also enhanced the diversity and cohesiveness of cultures in migrant receiving areas. According to Norris and Inglehart (2019), Guriev and Papaioannou (2022), and Rodrik (2021), migrants are changing agents in society. By blending in and spreading the norms and values they were raised with, migrants change the cultures of the societies they live in. This shows that how migration causes migrant cultures to become more integrated into the host communities and speeds up the process by which migrant groups adjust to the norms of their new location.

Negative implications on the place of destination

In most developing countries including Ethiopia, migration of people towards urban areas poses various social, economic and environmental problems. For example, Ethiopia is experiencing an increase in urban poverty, overpopulation, environmental pollution, inadequate sanitation, overcrowding in housing, congested traffic, road accidents, and criminal activity due to the country's increasing migration towards urban areas (Abdul & Yu, 2020). The same

circumstances exist in South Africa, as Chokoe and Meso (2017) noted that a growing number of new migrants contribute to the country's unemployment rate and make city living difficult. Because of migration and ongoing urban population growth, this ultimately leads to increased urban poverty.

Despite the positive effects of migrants' contribution to urban economic development, the growing number of people moving into migrant receiving urban areas puts pressure on socio-economic development. For instance, Ethiopia's urban areas are experiencing challenges such as a lack of basic services, pressure on employment opportunities, and the emergence of informal businesses, which in turn is a risk factor for the formal business sector (Berisso, 2023). Evers (2012) and Habtamu (2015) also stated that the migration of individuals into destination areas strains the provision of jobs and access to education. To this end, job opportunities are insufficient to accommodate the arrival of large numbers of migrants, and this affects basic facilities like schools, health, and housing.

Migration has also detrimental effects on basic infrastructure services, urban resources and structural changes at destination areas. Accordingly, a significant number of rural populations have relocated to cities and experienced structural changes that have led to high densities and pressure on urban land, resources, and infrastructure (Malik et al., 2020). The provision of services and the exhaustion of infrastructure have an impact on living conditions, business expansion, and the productive capacity of urban areas (Ghafoor et al., 2021). Recently, these challenges are visible in most urban areas of Ethiopia. Accordingly, it was confirmed by Rana and Bhatti (2018) that insufficient infrastructure and urban management capabilities pose a problem for Ethiopian cities as well.

Overview of migration theories

There are various migration theories which explain the causes, characteristics, and patterns of migrant-sending (rural) and migrant-receiving (urban) areas. However, this paper identified Ravenstein Laws of migration, Stouffer's intervening opportunities, and Lee's push-pull theories based on their relevance to this study.

Ravenstein law of migration theory

Ravenstein formulated his ‘Law of Migration’ theory’ in 1885 using data from 1881 British census of birth place. He formulated a series of laws, which explained contemporary migration in Europe. His laws comprised of set of migration such as the characteristics of migrants, their motives and patterns considering migrants origins and destinations areas (Ravenstein, 1885).

Based on his study on migratory patterns and birthplace analysis, Ravenstein proposed laws of migration. Some of the main laws of his theory includes (1) most migrants travel short distances and with increasing distance the number of migrants decreases; migrants proceeding long distances generally go by preference to one of the great centers of commerce and industry; (2) migration occurs in stages i.e. migration will first be to nearby places and then to most rapidly growing cities; (3) the flow of migration between two places is never uni-directional (there is streams and counter-streams of migration) (4) the direction of migration is mainly from agricultural to industrial areas, therefore migrants are more likely to have rural origins than urban origins, (5) females appear to pre-dominate among short journey migrants; (6) the volume of migration increases with the development of transport, industry and commerce; and (7) the economic motives are predominant among push and pull factors of migration (Ravenstein, 1885).

Ravenstein’s “laws of migration” constitute one of the early theories of migration, upon which other modern theories have been constructed (King, 2012). His theory also depicts that people relocate to migration destination areas from their place of origin in search of better opportunities. This indirectly implies that, in developing countries, individuals living in rural areas are far more inclined to migrate than those living in urban areas in search of job opportunities.

In his stages of migration model, Ravenstein notes that individuals gradually migrate from their rural areas to primate cities in search of improved social services and employment possibilities (Clark, 2008). Figure 1 illustrates that individuals migrate in phases rather than moving from villages to metropolises. Instead, they move from the village to the small town, then the small town to the city, and finally the city to

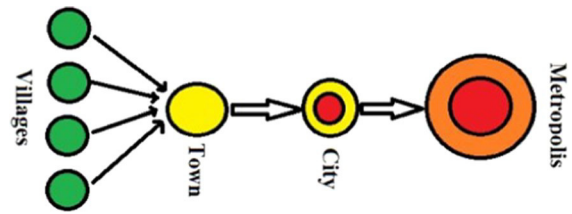


Fig. 1 Stepped migration. Source Singh (2023), <https://pangeography.com/Ravenstein's-laws-of-migration>

the metropolis. As a result, migrants travel the great distance in phases and in steps.

From Ravenstein explanation, we can conclude that urban growth was fuelled by rural to urban migration, and the major causes of migration were economic motive. Migration is sex and age selective and is also related to distance. Even though the theory is developed and applied for advanced nations of Europe particularly for Britain, it is also applicable for this study. As a result, most of his laws are consistent with the study findings except law 5 which states females appear to pre-dominate among short journey against male dominant migrants of this study.

Stouffer's theory of intervening opportunities

Stouffer developed his theory of “Intervening Opportunities which relates mobility and Distance” in 1940. His theory depicts that the nature of geographic space is more important than distance in determining migration behavior which is the most important factor in determining migration composition and volume in Ravenstein’s Laws of migration theory. His model is a hybrid of the gravity model of migration. He realized that migration does not solely depend on opportunities at place of origin and destination but also depends on competition among migrants from different regions. He states that the number of opportunities at the places of origin and destination is strongly correlated with the size of migration. Additionally, it is inversely proportional to the number of intervening opportunities available between the two places (Stouffer, 1940).

In his model, rather than choosing the size of cities, he employs the number of opportunities as a pulling force and obstacles or barriers as push forces. The sum of push and pull forces at the origin and destination places determine the magnitudes of migration.

The place with more opportunities attracts more people and becoming the destination. On the other hand, place of limited opportunities becoming the point of origin. Thus, greater the difference in the amount of opportunities available at these two places, the greater the migration. Furthermore, the flow of migration is interrupted by the opportunities that exist between the point of origin and the destination. Hence, many of the migrants stop at the intervening cities and do not proceed to the large city (Stouffer, 1940).

In conclusion, Stouffer's model of migration was significant for addressing the volume and direction of migration. It is a positivist model that uses gravity to estimate migration between two places. However, it lacks the behavioral and sociological characteristics that are crucial to the composition of migration. For example, his model predicts that people who lack education and awareness will likely remain in their origin. Some elements of the model such as factors of opportunities and challenges stated at the place of origin and destination are applicable for this study.

Lee's theory of migration: the push–pull model

Everest Lee revised the basic push–pull concept in 1966. In order to accommodate different spatial movements, he developed a “general schema” (Lee, 1966). In addition, he made an effort to draw some conclusions about the elements that go into migration, the volume of migration, the growth of streams and counter streams, and the characteristics of migrants. Lee divided the causes of -migration into four categories as “push” factors (factors associated with the area of origin) “pull” factors (factors associated with the area of destination), intervening obstacles and personal factors.

Lee also proposed that there are positive forces that draw people to or retain them in the area, negative forces that repel or push them out of the area, and zero forces that have no influence in either case. Personal characteristics, such as age, economic level, religion, and educational achievement, influence these parameters related to the places of origin and destination, “which affect individual thresholds and facilitate or retard migration.” The last factor in Lee's model is the idea of “intervening obstacles” interrupted between origin and destination. These are the problems and barriers which a migrant encounters while migrating from one place to another. These

consist “friction” in the migration process (transport costs, migration controls etc.) and may slow or retard migration, or even (in the case of a law) prevent it altogether (Lee, 1966).

In general, we can conclude that Lee's theory provides comprehensive and all-encompassing explanation of different facets of migration such as volume and streams of migration, and characteristics of migrants. Furthermore, it accommodates almost all aspects of the process of migration and tries to explain them rationally. Though it is an impressive intellectual effort, Lee's theory lacks objectivity on diversity of area and nature. To this end, some of the theoretical foundations of this model especially factors of origin and destination are applicable for this study. Therefore, given the significance of these theories, this study will be evaluated in relation to their principles and frameworks.

Research methods and materials

Woldia and description of its peri-urban areas

The main town of north-Wollo administrative zone, Woldia, is located astronomically between 11° 48'56" N and 11° 50'39"N latitudes and 39° 34'30" E and 39° 36'56"E longitudes. It is located on the main north–south route that connects Mekele in the Tigray region with Addis Ababa, the country's capital. The town is situated 521 km from Addis Ababa, 360 km from Bahir Dar, the regional capital, and 180 km from Lalibela, a popular tourist destination area of Ethiopia (Baye et al., 2020).

Three radial highways connect Woldia, making it a nodal town. As a result, the town served as a junction with Mekele in the north, Djibouti in the east, Addis Ababa-Dessie in the south, and Bahir Dar in the west. Additionally, it serves as a primary entrance point to Lalibela's spiritual and touristic hub. The town is physically constrained from future expansion to the east and north by Mount Gubarja and Mount Gebriel respectively.

Peri-urban study areas

Recently, Woldia is divided into three sub-cities namely Taitu Bitul, Ras Ali, and Yeju. Taitu Bitul is home to Ariro, Adengur-Gebriel and Tinfaz sites

of the study area. Yeju sub-city includes Teklehaymanot (Admas Bashagr) research site, and Ras Ali also includes Michael and Mechare sites of the study. These peri-urban areas are intentionally chosen because they serve as the initial destination for migrants.

The selection of these study sites is strategic, considering their role in accommodating the influx of people moving to the town. Migrants often find these locations appealing due to several factors, such as the availability of affordable housing and proximity to potential employment opportunities at newly established Woldia University as compared to more central and densely populated areas of the town. Additionally, these peri-urban areas typically provide a transitional environment for migrants, offering a blend of rural and urban characteristics that can ease their adjustment to urban life. As a result, these areas are pivotal in ensuring a smoother integration of migrants into the urban fabric. Figure 2 depicts the location map of Woldia town and a brief description of the sample study sites.

Ariro site The site incorporates Debregelila (Commanida Teba) Kebele 01, and the northern most portions of Yejugenet Kebele 04 of Woldia town and

located South of the foothills of Gebriel Mountain. In this area, the settlements are most nucleated in the south and scattered in the north because the southern part was the one settled first and the northern part is more recent.

Adengur-Gebriel This site includes south-west hill areas of Mount Gebriel which limits the physical growth of the town towards that direction and Adengur at which the establishment of new settlements has prevailed in the North West direction. It includes a narrow road to Gebriel in the east, and the urban peripheral Yejugenet kebele's of 04 and Adengur Kebele 08 of Woldia in the south.

Mechare site This area is located the south-west part of the town at which new settlement is expanded on the flat plain of Mechare Meda. Woldia stadium is also located in this direction. To the west, it borders the Tikur Wuha and Melkademu rivers. The future spatial growth of the town will be prolonged in this area. It is also found south of the main road of Gondar-Bahir Dar high way. The newly constructed road connecting Addis Ababa-Dessie to Woldia runs through this site.

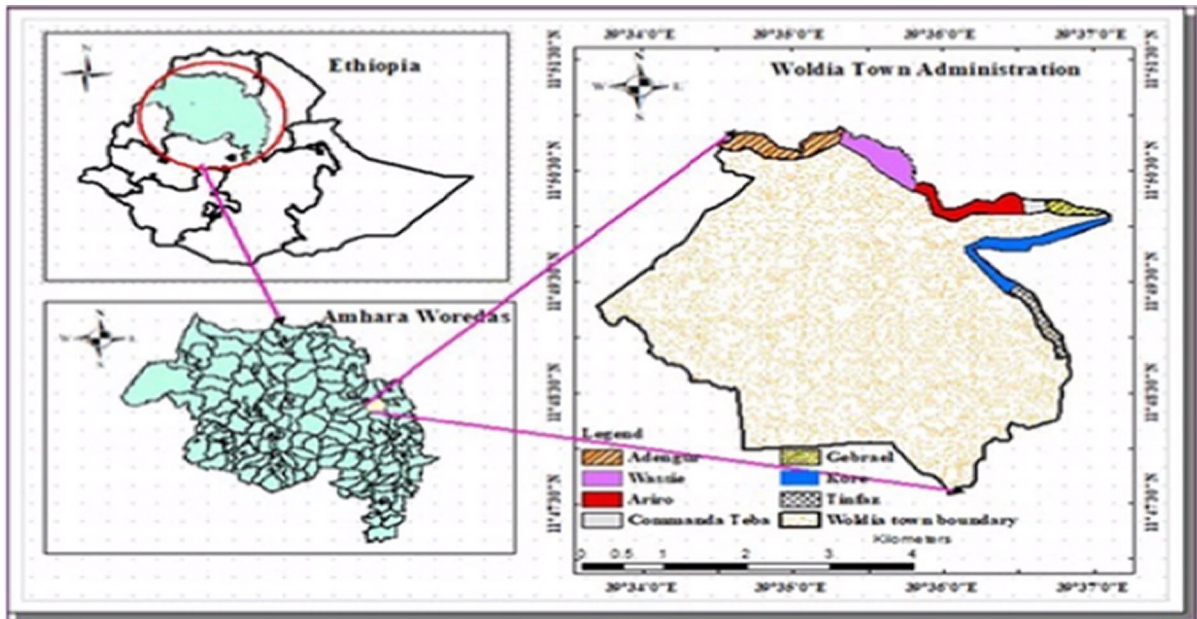


Fig. 2 Location map of Woldia and sample of the study peri-urban areas. *Source* adopted from Baye et al., 2023, p. 4

Michael site Located north of the main Gondar-Bahir Dar Road, southwest of Adengur Kebele, and west of Yejuenet Kebele, this area hosts the town’s largest market, “Makisegno Gebeya/Tuesday market.” The main industrial zone of the town is also located in this site. The south, south-east and south–west part of the area is characterized by moderately migrant population concentration since the proximity of “Makisegno Gebeya/ Tuesday market”, proximity to the town’s Central Business District (CBD), and the industrial buffer zone of the area.

Teklehaymanot/Admas Bashager site This area is found east of Mechare site, West of Tinfaz site, and north- of Woldia University. The area is characterized by a high concentration of migrants due to several factors. Firstly, the city administration has provided plots of urban land for applicants in this site, making it an attractive location for those seeking new housing opportunities. Additionally, the proximity of Woldia University plays a significant role in drawing people to the area. Many migrants move here to be closer to the University for various reasons, including employment opportunities within the institution, the pursuit of job prospects in the surrounding area, and access to higher education.

Tinfaz site It is bounded by the foothills of Kore and Gubarja Mountains to the East, Debregelila (Kebele 01) to the west, Teklehaymanot to the South-West, Woldia University to south east and Awura Godana to the south. In north-east part of the site, the physical growth of the town is limited because of the physical barriers of mount Gubarja/Kore. This area has mostly developed and is being developed on the forest reserved foothills of Gubarja Mountain. As with neighboring Kore, the areas are potentially risky, as

they could be threatened by landslides and rock falls at any point in time.

Research design

A mixed-approach research design incorporating both quantitative and qualitative methods was employed in this study. More specifically, the descriptive survey design of the quantitative approach was employed. Furthermore, qualitative information gathered through focus group discussion and interviews was used to support the conclusions drawn from the quantitative study.

Target population, sampling technique and sample size

The study’s target population includes managers and experts of municipalities, kebele managers, Zonal Labour and Social Affair experts as well as rural to urban, urban to urban and intra-migrant (migrants who moved from the center of Woldia to its periphery).The town is divided into four rural and six urban kebeles. Out of these, one rural kebele (Adengur) that is extremely close to the town and all urban kebeles were specifically chosen for the study. These are the kebeles where most of the migrant households were located.

According to data obtained from Woldia Woreda Health Department, the entire urban population of the town in the year 2020 /21 was 89,707. Of these, 65,465 were settled in the study sites of the town. From 65,465 populations, 37,887 of them were migrants. The sample size was determined by using the formula of Yamane (1973) while taking the margin of error of 5% and the degree of confidence (95%) (Table 1).

Table 1 Sample size distribution of each study site

Name of sites/kebeles’	Total population	No. of migrants	Sample size distribution
Arirro/Debregelila (01)	9502	4300	$(4300/37,887) \times 395 = 45$
Tinfaz (02)	9501	2500	$(2500/37,887) \times 395 = 26$
Admas Bashager (03)	11,042	9200	$(9200/37,887) \times 395 = 96$
Yejuenet (04)	11,042	5200	$(5200/37,887) \times 395 = 54$
Michael/Deferge (05)	8301	4687	$(4687/37,887) \times 395 = 49$
Mechare/Kebele (06)	9940	7500	$(7500/37,887) \times 395 = 78$
Adengur Gebriel(08)	6137	4500	$(4500/37,887) \times 395 = 47$
Total	65,465	37,887	395

Source Woldia Woreda Health Department (2021)

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

where, N=target population; e=sample error estimated (0.05); n=total sample size; Therefore, $n = \frac{37,887}{1+37,887(0.05)^2} = 395$.

From the total migrant population (37,887), 395 sample household migrants were selected by using simple random sampling technique from their kebele list. That is, after determining the sample size, a list of migrants was requested from each kebele. Once the lists were obtained, a random starting number was selected by the researcher (corresponding author). For example, in an area with a total migrant population of 4300, and a sample of 45, the population was divided by the sample size yielding approximately 96. A random number between 1 and 96 was then chosen (in this case 36), which was used as the first sample. The second sample was selected by adding 96 to the starting number (132), the third sample was 228 and so on, and until the desired sample size was achieved. The same procedure was applied to the remaining sites.

Data sources and methods of collection

Data sources

Primary data sources were collected from a survey of sampled migrants, interviews, and focus group discussions so as to examine the major impacts of migration and its implication at place of origin and destination. In addition, secondary data sources were used to support the primary sources. Secondary data sources were gathered from a variety of published and unpublished materials, such as books, research papers, websites, and journal articles written by various academics on migration-related topics.

Data collecting procedures and tools

Data collecting procedures In order to facilitate the research process, a pre-test was carried out on some selected study sites to validate whether or not the first draft of the questionnaire had any ambiguities, misunderstandings, or other flaws. A pilot test of the first draft was administered to 10 migrant respondents (6 males and 4 females) at sites of Admas Bashager, Mechare, and Yejugenet before the actual survey

was conducted. The respondents in the pilot were the part of the population from which the sample is to be taken. The rationale for selecting these pilot respondents from migrant population is based on their ability to represent the attributes of the broader migrant population.

Since Amharic is the town's working language and many of the migrant residents are thought to be able to speak and understand it, the final version of the questionnaire was written in English and translated into the Amharic language. In translating the questionnaire, three lecturers of Woldia University two from the department of English language and literature, and one lecturer from department of Geography and Environmental Studies were consulted.

By moving from door to door, 395 households were surveyed. Seven enumerators (six male and one female) participated in the survey administration. Three teachers of Woldia Preparatory Schools, two teachers of Woldia High School, and two grade twelve students were selected based on specific standards and received training on how to conduct field data collection. Besides, there were 4 supervisors (all of them were male and who are lecturers from Woldia University) in each of the data collection sites. At the end, questionnaires were administered to 395 respondents. Besides, 12 key informant interviews and 14 FGDs with two group members were carried out. All in all, a total of 421 participants from different categories have taken part in this study as shown in Table 2.

Data collecting tools

Questionnaire Questionnaire was used as the main data collection instrument in the study because it is self-administered and can be distributed to a large number of individuals at once. With a limited amount

Table 2 Type of instruments and number of sample participants for data collection

Instruments/tools/	Number
Interview	12
FGDs	14
Questionnaires 395	395
Total	421

Source Field Survey (2021)

of time, a questionnaire allows for the collection of more data from a large number of respondents. Additionally, it can reduce the interviewer's bias and permit the use of large sample sizes, both of which will lead to more trustworthy and consistent outcomes. There are both closed and open-ended question types in the survey.

Before giving the questionnaire to the respondents, the purpose of the study and the expected results were explained by the researcher. The participants were allowed to ask any questions and clarify any sort of ambiguity regarding the questionnaire before they answered it. Giving the participants a comprehensive understanding of the study, helps mitigate the chance of faulty responses.

Interview The study used structured and semi-structured interviews to gather qualitative data from key informants. The study used face-to-face interviews. Before conducting the interview, a suitable interview place is arranged, and the researcher introduces his name, addressing the aim of the research with great caution and confirming to the interviewees their responses are kept confidential. In doing so, interview questions were administered to the target participants based on the intended schedule.

Accordingly, one municipality manager and two experts interviewed about the effects of migration at the place of origin and destination, five kebele managers regarding basic social amenities, and four North Wollo Zone Labour and Social Affairs experts who have information about the pattern of migration. To this end, interviews were held for 20–70 min, with an average interview time of 45 min. At the end, the researcher highly acknowledged all the participants for their valuable information they forwarded after the interview sessions ended.

Focus group discussions (FGDs)

The study also used focus group discussions (FGDs) to validate the data gathered through other methods. From seven administrative kebeles of the sample sites, fourteen elders (two from each Kebele) were purposely selected. The selection criteria were strategic: their prolonged experience of the past and present development of Woldia provided valuable perspectives for understanding the complexities of

the impacts of migration in the areas of origin and destination.

The members of the focus group were purposefully selected because the majority of them lived long periods of time in the town. The FGDs were held with two sessions: the first group, which consists of seven members, was conducted at the Deputy Mayor Office, and the second group of the remaining seven was conducted at the Municipality Office. The discussions were held for 55–85 min, with an average interview time of 70 min.

Methods of data analysis

The quantitative data obtained through the questionnaire were analyzed using Excel and SPSS version 21 via descriptive techniques such as frequency, percentage, and figures. The data obtained through interview and FGD was also analyzed under each category to support results of quantitative data.

Ethical considerations

Consent to participate

Following the necessary approvals and the development of data collection tools, the researcher and data collectors effectively communicated the research objectives to participants, explaining the study's purpose and scope transparently. They ensured participants understood how their information would be gathered, anonymized, and stored confidentially. Additionally, they clarified the methods of data collection and how the study findings would be utilized and shared, maintaining transparency and accountability. Participants were asked to complete an informed consent form, but due to concerns about potential repercussions and political sensibilities, they chose not to sign. Instead, verbal consent was obtained, with participants briefed extensively on the research's purpose and their rights to withdraw.

Consent to publish

Like their apprehensions about participating in the study, participants also expressed concerns about the implications of signing or providing written consent, fearing potential repercussions if their names appeared on the document. Consequently, rather than

seeking written consent, verbal consent for publication was obtained from all participants after they were briefed on the research objectives. Their anonymity was assured by not disclosing their identities or names in any published material. The researcher pledged confidentiality regarding their feedback and offered to supply transcripts upon request.

Results and discussion

Understanding the respondents' demographic and economic conditions is crucial in getting a good picture of the effects of migration. Therefore, it is important to provide the demographic information (sex, age structures, and marital status) and socio-economic characteristics (religion, level of education, and employment status) at the outset of sample respondents. Besides, respondents' place of birth, distance traveled, and their patterns of migration were also presented.

Demographic and socio-economic characteristics of respondents

Age and sex structure of the respondents

The two primary demographic factors that influence the migration process are age and sex. Table 3

displays the age-sex distribution of the respondents, revealing that 274 (69.37%) of the respondents were male and the remaining 121 (30.63%) were female. Table 3 additionally indicates that prior to moving to Woldia town, 69.01% male respondents' and 66.12% female respondents were in the age group of 15–34. However, following their migration to the town, the majority of male respondents (79.2%) and female respondents (72.73%) fell into the age range 25–44.

Table 3 also shows that age range of 15–44 comprised the majority of them, who were found to be in their productive age. The findings reveal that the majority of respondents, both male and female, were in age groups of 15–34 before migrating to Woldia town. This indicates a pattern where individuals within this age bracket are more likely to migrate to Woldia town. The research findings highlight the gendered and age-specific nature of migration to Woldia town.

The dominance of male migrants, particularly within the younger age range of 15–44, suggests a selective migration pattern. This migration pattern is consistent with Ravenstein's law of migration (Ravenstein, 1885). This has dual implications for the town: on one hand, it provides a robust labor force, contributing positively to its development and growth. On the other hand, it leads to a decline in the labor force at the migrants' place of origin, impacting agricultural production and overall population size negatively.

Table 3 Age-sex distribution of sample respondents'

		Sex of respondents					
		Male	Percent	Female	Percent	Total	% Total
Age before migration	< 15	42	15.33	36	29.75	78	19.75
	15–24	132	48.18	51	42.15	183	46.33
	25–34	79	28.83	29	23.97	108	27.34
	35–44	15	5.47	3	2.48	18	4.56
	45–54	6	2.19	1	0.83	7	1.77
	55–64	0	0	1	0.83	1	0.25
	> 65	0	0	0	0	0	0
Total		274	100	121	100	395	100
Age after migration	15–24	7	2.55	13	10.74	20	5.06
	25–34	124	45.26	56	46.28	180	45.57
	35–44	93	33.94	32	26.45	125	31.65
	45–54	38	13.87	14	11.57	52	13.16
	55–64	10	3.65	4	3.31	14	3.54
	> 65	2	0.73	2	1.65	4	1.01
	Total		274	100	121	100	395

Source Field Survey (2021)

The nearly 2:1 ratio of male to female migrants underscores the gender imbalance in migration flows. Additionally, the fact that migration decreases with age indicates a dynamic where younger individuals are more inclined to migrate. This migration pattern is also consistent with Ravenstein’s law of migration (Ravenstein, 1885).

Marital status and age structure of the respondents

The other demographic details of the sample respondents were age and marital status. Based on the survey data shown in Table 4, 58.73%, 38.73%, 1.52%, 1%, and 1% of the respondents were single, married, divorce, separated, widower and widowed respectively before they migrated to the town.

Table 4 also shows that the respondents marital status with their age. Accordingly, the survey result depicts, 65.57% (married), 25.31% (single), 4.81% (divorced), 2.03% (Widowed), 1.27% (separated) and 1.01% (widower) respondents were the most common marital statuses following relocation.

The data reveals a shift in marital status composition before and after migration, with significant implications for the town’s social services and economy. Before migrating, the majority of respondents were single, predominantly within the younger age bracket of 15–34. However, following migration, there was a notable increase in the percentage of married migrants, particularly within the 25–44 age

groups, accompanied by a decrease in single migrants and a slight increase in divorced migrants. This shift suggests a trend where individuals are transitioning to marriage or experiencing changes in marital status post-migration.

The increase in married migrants may strain social services and the economy of Woldia town, potentially leading to challenges such as increased population growth and unemployment. Furthermore, the decrease in single migrants indicates a shift in the demographic composition of migrants, which may have implications for housing, employment opportunities, and community dynamics in the town.

Socio-economic characteristics of respondents

Educational status of respondents A range of educational levels were shown in Table 5. The results showed that 17.47%, 15.19%, 14.18%, 13.67%, and 11.14% had attended secondary, junior, preparatory, bachelor’s, college diploma (for vocational training and college of teachers’ education), and college before moving to the town respectively. However, after moving to the town, 36.96%, 17.23%, 12.66%, and 11.14% of the respondents had attended Bachelor, Master’s Degree, College Diploma (vocational training and College of teachers’ education), and Secondary education (high school) respectively.

The research findings underscore the relationship between educational attainment and migration

Table 4 Marital status and age structure of the respondents’

		Age interval							Total
		<15	15–24	25–34	35–44	45–54	55–64	>65	
Marital status before migration	Single	65	114	46	6	0	1	0	232
	Married	12	64	61	11	5	0	0	153
	Divorced	0	4	1	0	1	0	0	6
	Widowed	1	0	0	0	0	0	0	1
	Widower	0	0	0	0	1	0	0	1
	Separated	0	1	0	1	0	0	0	2
Total		78	183	108	18	7	1	0	395
Marital status after migration	Single	0	15	61	15	6	3	0	100
	Married	0	5	114	99	31	10	0	259
	Divorced	0	0	4	9	6	0	0	19
	Widowed	0	0	0	1	5	0	2	8
	Widower	0	0	0	0	1	1	2	4
	Separated	0	0	1	1	3	0	0	5
Total		0	20	180	125	52	14	4	395

Source Field Survey (2021)

Table 5 Level of education before and after migration

Level of education	Education before migration		Education after migration	
	Frequency	Percentage	Frequency	Percentage
Illiterate	31	7.85	18	4.56
Read and write**	28	7.09	21	5.32
Primary school (1–6)	39	9.87	20	5.06
Junior (7–8)	54	13.67	17	4.30
Secondary (9–10)	56	14.18	44	11.14
Preparatory (11–12)	44	11.14	11	2.78
College Diploma	60	15.19	50	12.66
Bachelor	69	17.47	146	36.96
MSc/MA	14	3.54	68	17.23
PhD	0	0	0	0
Total	395	100	395	100

**Read and write Those respondents who attended basic and adult education

Source Field Survey (2021)

to urban areas, as evidenced by the data presented in Table 5. The analysis reveals a clear pattern: individuals with higher levels of education are more inclined to migrate to Woldia town. Before migrating, a significant portion of respondents had completed secondary, junior, preparatory, bachelors, and college diploma education. Even, after migration, there was a notable increase in the percentage of respondents who had attained bachelor's and master's degrees, indicating a trend where individuals with higher educational qualifications are more likely to relocate to urban areas.

This trend aligns with the assertions of scholars such as Wondimagegnu (2012) and Habtamu (2015), who argue that education plays a pivotal role in shaping migration patterns. Higher levels of education provide individuals with increased income, access to diverse opportunities, and the ability to navigate social, cultural, and economic challenges in urban settings. Consequently, educated individuals are more likely to migrate from rural to urban areas in pursuit of better prospects and improved quality of life.

Religious composition of the respondents

One of the main socio-cultural traits of society is its religion. The religious make-up of the area of origin and destination has a major impact on migration which implies that people change their everyday patterns when they relocate. Woldia is the center of the major religion of the country and this induced people to migrate to the town.

As can be seen in Table 6, 78.22% of the respondents said they were followers of Orthodox Christianity, with 15.70% and 6.08% of respondents reporting they were followers of Muslims and Protestants, respectively. The survey result also reveals that the percentages of male and female respondents who identified as Orthodox Christians were 82.12% and 69.42%, respectively. Conversely, 5.11% of male respondents and 8.26% of female respondents identified as protestant followers, while 12.77% of male respondents and 22.31% of female respondents identified as Muslim.

Table 6 Religious composition of the respondents

		Sex of respondents					
		Male	Percent	Female	Percent	Total	% Total
Religion	Orthodox	225	82.12	84	69.42	309	78.22
	Muslim	35	12.77	27	22.31	62	15.70
	Protestant	14	5.11	10	8.26	24	6.08
	Catholic	0	0	0	0	0	0
	Other	0	0	0	0	0	0
Total		274	100	121	100	395	100

Source Field Survey (2021)

Based on the survey results, we can conclude that there was a notable difference in religious beliefs between genders. This can be attributed to the observation that female respondents were more prevalent among Muslim and Protestant faiths, while male respondents were more common within the Orthodox Christian faith. This highlights the influence of socio-cultural factors, including religion, on migration patterns and destination preferences.

Employment, type and nature of works of the respondents One of the determinant factors for the decision to migrate is occupational status as well as type and nature works of migrants they had before migration. This indicates that a person’s occupation before migration influences their decision to migrate. Table 7 depicts the employment status, type and nature of works of the respondents in the study area.

According to the survey results in Table 7, 241 (61.01%) of the respondents said that they were employed, followed by 147 (37.22%) “Others” and 6 (1.52%) pensioners. Out of the respondents that were employed, 202 (83.82%) worked for government sector, 28 (11.62%) for the private sector, and 9 (3.73%) for self-employed. Conversely, of the respondents who disclosed “others” employment status accounted for 79 (53.74%) of another sector, 61 (41.50%) self-employed and 7 (4.76%) in private sector. The study also reveals that the majority of respondents 209 (86.72%) their nature of works was permanently employed, 22 (9.13%) temporary, 8 (3.32%) seasonal and the remaining 2 (1.36%) others sectors.

In this study, self-employed refers to respondents’ who have formally established and registered their own business, and working in shops and trade. Private employed refers to respondents working in recognized private organizations who pay income taxes to the government. Others refer to respondents engaged in unregistered income generating activities such as daily workers, and those involved in loading and unloading activities etc. Unable to work refers respondents who are elderly, retired, and disabled.

The survey results show that the majority of respondents were employed and engaged in government sector of the town. The employment status and nature of work of respondents indicate that the majority were employed in the government sector of Woldia town, suggesting the association between occupational status and migration. This finding aligns with Teye (2018), Berisso (2023), and Lee (1966) who ascertains that higher educational attainment increases the likelihood of migration to urban areas, as individuals seek better opportunities and prospects.

Place of birth of the respondents

Based on the survey result presented in Table 8 more than half of the respondents 221 (55.95%) had rural origin and the remaining 174 (44.05%) had an urban origin.

As can be seen in the Table 8, of the respondents who were of rural origin, 163 (59.49%) were men and the remaining 58 (47.93%) were women. However, those respondents who were an urban origin showed

Table 7 Employment status, type and nature of works of respondents

		Employment status				
		Employed	Pension	Unable to work	Others	Total
Work type	Self employed	9	0	0	61	70
	Private	28	2	0	7	37
	government	202	2	0	0	204
	Other	2	2	1	79	84
Total		241	6	1	147	395
Nature of work	Permanent	209	1	0	11	221
	Temporary	22	2	1	24	49
	Seasonal	8	0	0	28	36
	Others	2	3	0	84	89
	Total		241	6	1	147

Source Field Survey (2021)

Table 8 Place of birth of the respondents

		Sex of respondents					
		Male	Percent	Female	Percent	Total	% Total
Place of birth	Rural	163	59.49	58	47.93	221	55.95
	Urban	111	40.51	63	52.07	174	44.05
Total		274	100	121	100	395	100

Source Field Survey (2021)

that 40.51% accounted for male and 52.07% of them were female.

Based on the survey results, the analysis of respondents' places of birth highlights a significant difference in origins between male and female respondents with the majority coming from rural areas. This suggests that male respondents were more prevalent in rural origins and female respondents were more prevalent in urban origins, influenced by factors such as economic opportunities and quality of life. These pull factors align with Lee's pull factors in the context of destination areas (Lee, 1966).

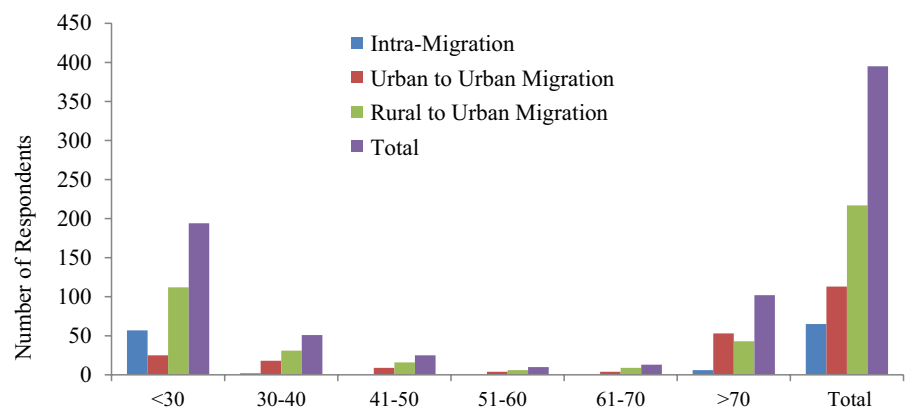
Distances and pattern of migration of the respondents

People frequently migrate from low-opportunity areas to high-opportunity places. In this regard, Stouffer's (1940) in his theory of intervening opportunities stated that the area with more opportunities attracts more people and becoming the destination and area with limited opportunities becoming the point of origin. Thus, greater the difference in the amount of opportunities available at these two places, the greater the migration. Migrants typically move to adjacent nearby areas; hence distance influences their choice of destination. In line with this, Ravenstein (1885) in his theory of law of migration asserted that the

number of people migrating from an origin to a particular destination reduces as the distance between them grows.

The survey data used in this study also demonstrates the presence of this relationship in the migratory pattern presented in Fig. 3. A close look at Fig. 3 reveals that from the total sample respondents, most of the migrants 194 (49.11%) were traveled short distance (less than 30 kms) while 102 (25.82%), 51(12.91%), 25 (6.33%), 13 (3.29%), and 10 (2.53%) of the migrants were traveled greater than 70 kms, 30–40 kms, 40–50 kms, 61–70 kms, and 51–60 kms respectively. Short-distance migrants made up 194 (49.11%) of the sample respondents; of these, 112 (28.35%) were rural–urban migrants, while the remaining 57 (14.43%) and 25 (6.32%) were intra-migrant and urban to urban migrants respectively. This indicates that the majority of the respondents were short distance migrant who had rural to urban migration followed by urban to urban migration. The survey also showed that, with the exception of migrants with urban and rural origins who traveled more than 70 km, the number of migrants declined as distance increased.

The distances and patterns of migration among respondents reflect the influence of distance and opportunity on migration decisions. Most migrants

Fig. 3 Distances and pattern of migration of respondents. Source Field Survey (2021)

traveled short distances, with the majority originating from rural areas and moving to Woldia town. This migration pattern is consistent with Ravenstein’s law of distance in migration (Ravenstein, 1885) who suggested that migrants tend to settle in major industrial and commercial hubs, with a preference for shorter distances due to factors such as accessibility and familiarity; that the number of migrants diminishes with increasing distance.

Impacts of migration at place of origin and destination

Migration has a wide range of effects on sending and receiving areas. The effects may vary from country to country since the root causes of it also vary across the world. The effects could be on population size or composition, economic productivity, income disparity, and access to social services.

Impacts of migration at place of origin

Migration affects the place of origin in both positive and negative ways. Regarding this, data on the effects of migration, whether positive or negative, at the place of origin was gathered. The respondents stated

Table 9 Respondents response on impacts of migration at place of origin (positive or negative)

Responses	Frequency	Percentage
Yes	210	53.16
No	185	46.84
Total	395	100%

Source Field Survey (2021)

that migration has both positive and negative effects at the place of origin.

Respondents were requested to give a yes or no answer whether migration has an impact on their areas of origin. As depicted in Table 9, from the total sample respondents (395), 210 respondents, or over half (53.16%) perceived that migration had a positive impact on sending areas, while 185 respondents (43.84%) replied that migration had a negative impact. The research provides insights into the multifaceted impacts of migration on both the places of origin and destination, shedding light on various socio-economic and demographic dynamics.

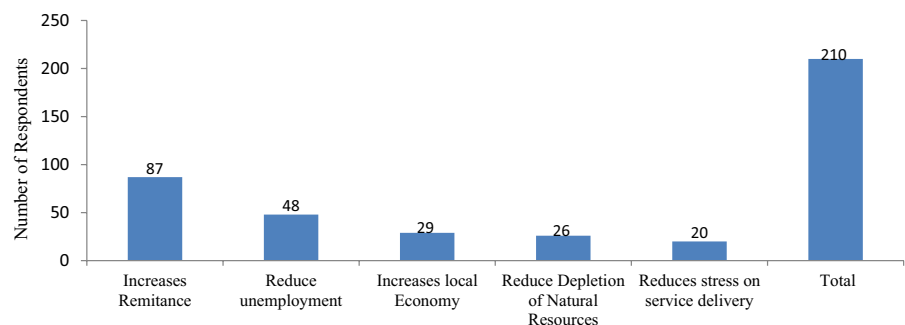
Positive impacts of migration at place of origin

Remittances and economic gains to sending areas are examples of the beneficial consequences resulting from migration. Economic gain has frequently been the main motivation for migration, and the money that urban dwellers earn from their move may be a valuable resource for returning to their home areas.

Figure 4 illustrates, from 395 total sample respondents’, 210 respondents responded that migration had a positive impact. Out of 210 respondents who responded positively, 87 (41.43%) said that migration increased the flow of remittances, while 48 (22.86%), 29 (13.81%), 26 (12.38%), and 20 (9.52%) responded positively, meaning that migration decreased unemployment, increased the local economy, decreased the depletion of natural resources, and decreased the stress on social services in sending areas.

According to the survey results, migration enhances remittances and local economy contributing to households’ financial stability and acting as a buffer against external shocks. This finding is consistent with Hagen-Zanker (2015), who stated that

Fig. 4 The positive effects of migration at place of origin. Source Field Survey (2021)



remittances from migrants and migration itself help rural farmers in developing nations to reduce risk and overcome financial barriers, enabling them to more readily adopt farming innovations. Wondimagegnhu (2012) also found that remittances from migration increase the amount of capital stock, particularly in households that send short-term migrants as opposed to non-migrant sending households.

Migration also reduces the depletion of natural resource through migrant transferring some sort of skills and knowledge to their home areas. In line with this, Obani and Odalonu (2023) stated that migration involves the transfer of financial assets (including remittances), know-how, and skills for the individual family, household, society, economy, and development as a whole.

Negative impacts of migration at place of origin

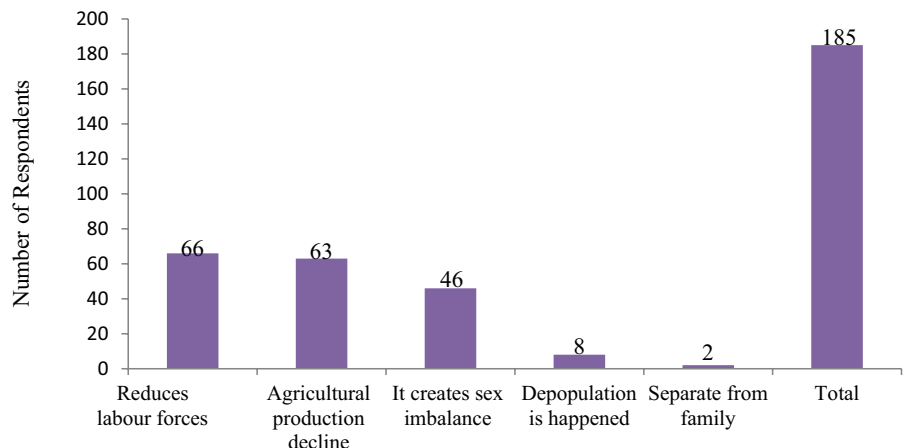
Reductions in labor force participation, a drop in agricultural output, a fall in family connection, and other related factors are some of the negative effects of migration on the sending areas. Based on the survey results on the respondents' age, sex, and place of birth, it was observed that most of the respondents were from rural origin, belonged to the young and adult age group, and were predominantly male. As a result, sending areas' agricultural production and labor force distribution may be significantly impacted. From 395 total sample respondents, 185 of them replied that migration had a negative impact. The respondents who responded negatively and their corresponding results are shown on Fig. 5.

Figure 5 illustrates that among the 185 respondents who answered, "negative effects of migration," most of them 66, or 35.68%, and 63, or 34.05% responded that migration decreased labor force participation and agricultural output in the sending areas. However, the remaining 46 (24.86%), 8 (4.32%), and 2 (1.10%) of them mentioned sex imbalance, depopulation, and family separation respectively.

As the findings of the study depicted, migration reduces human capital and agricultural output of the origin. This result is consistent with Eshetu et al. (2023), who noted that rural out-migration reduces human capital and agricultural output in the areas of origin, which has a negative effect (loss of labor force) on the welfare of households that send migrants. Ketema and Diriba (2021) stated that young people those who engaged in labor-intensive jobs in rural areas depart from their parents due to migration can have detrimental effects on their family's well-being and can slow down the local economy. In line with this, Mueller et al. (2020) also found that predominate of male migrants from the origin can shift the labor force of sending areas to female heads and other family members which had a detrimental effect on agricultural production and female heads to work longer hours on the farm.

Migration has also negative effects on population imbalance and rural depopulation as the survey result shows. Poston and Bouvier (2010) and Ketema and Diriba (2021) stated that the reproductive potential of the population and rural depopulation at origin is likely to be reduced due to people who migrate to urban areas tend to be of young childbearing age.

Fig. 5 The negative effects of migration at place of origin. *Source* Field Survey (2021)



Impacts of migration at place of destination

The positive and negative effects of migration on areas that receive migrants have also been examined in this study. Information was gathered from 395 sample respondents in order to determine the primary effects of migration as presented in Table 10.

According to Table 10, 283 respondents (71.65%) said that migration had beneficial benefits to destination areas, whereas 112 respondents (28.35%) replied that migration had negative effects.

Positive impacts of migration at place of destination

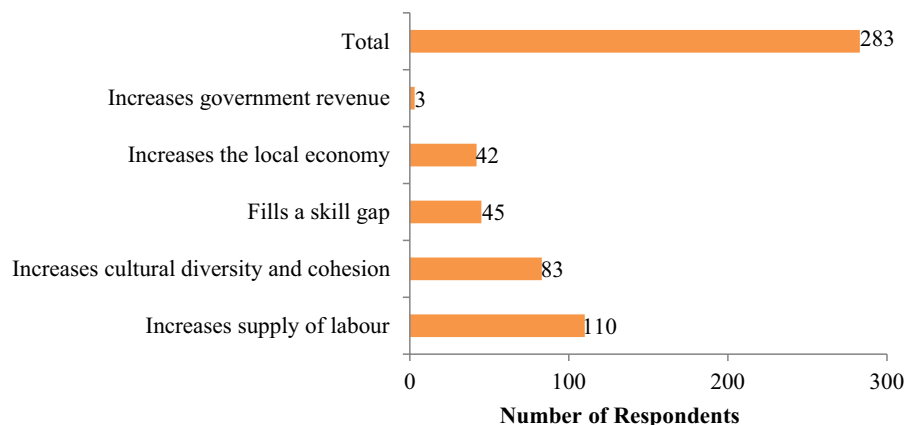
The results of the survey, as shown in Fig. 6, indicate that migration has a beneficial influence on the destination area in terms of increased labor supply, cultural variety, filling skill shortages, local economy, and government revenue. Of the 283 respondents that gave a positive impact response, 110 (38.87%) and 83 (29.33%) said that migration improved the labor supply, cultural variety and cohesion respectively. The responses from the remaining 45 (15.90%), 42 (14.84%), and 3 (1.06%)

Table 10 Respondents response on impacts of migration at place of destination (positive or negative)

Responses	Frequency	Percentage
Yes	283	71.65
No	112	28.35
Total	395	100%

Source Field Survey (2021)

Fig. 6 The positive effects of migration at place of destination. Source Field Survey (2021)



indicated that migration had a positive impact on skills, economy, and local government revenue.

The survey results allow us to draw the general conclusion that migration was a significant factor in the town’s socio-economic development by providing labor. The finding of this result is consistent with Berisso (2023) and McAuliffe and Oucho (2024) who stated that the economic benefits of migration in supplying labor force. In their studies, migration boost the destination areas in stimulating labour force and which in turn boosts employment and production, and thus benefits the local economy. Besides, key informant interview with Labour and Social Affairs office experts of the town administration confirmed that those who migrants from the surrounding areas and small-sized towns at the origin had positive effects in supplying labor force. This enables them to engage in labour demanding economic sectors of the town.

The findings of key informant interviews of labor and social affair experts of the town also shows that migration strengthened social interaction and social capital of the destination area in form of intermingling of culture, marriage language and religion. In line with this, Bauloz et al. (2019) stated that a new language, customs, social norms, and culture may need to be adapted to by migrants who are relocating, whether temporarily or permanently. Receiving communities’ attitudes, particularly their openness to migration and migrants, will also determine how much migrants are gradually integrated into their new area. These findings are also in line with the findings of Norris and Inglehart (2019), Guriev and Papaioannou (2022), and Rodrik (2021).

Negative impacts of migration at place of destination

Figure 7 shows that from 395 sample respondents, 112 sample respondents replied about the negative impacts of migration in the destination area. Out these (112) sample respondents, most of them 59 (52.68%) and 32 (28.57%) said that the main challenges migration to the town were population pressure and social services problems, respectively. Urban unemployment came in third with 17 (15.18%) and the remaining 4 (3.57%) respondents stated that migration raised the amount of land needed for home construction in the destination area. This implies that migrants from nearby rural and urban Woredas of the town contributed to rapid population growth. In line with this, Malik et al. (2020) confirmed that a significant number of rural populations relocated to cities have led to high population densities and pressure on urban land, resources, and infrastructure. Evers (2012) and Habtamu (2015) also stated that the migration of individuals into destination areas strains the provision of jobs and access to education, health and housing. Rana and Bhatti (2018) and Ghafoor et al. (2021) also asserted that urban ward migration resulted in insufficient infrastructure provision of services and the exhaustion of infrastructure such as water resources.

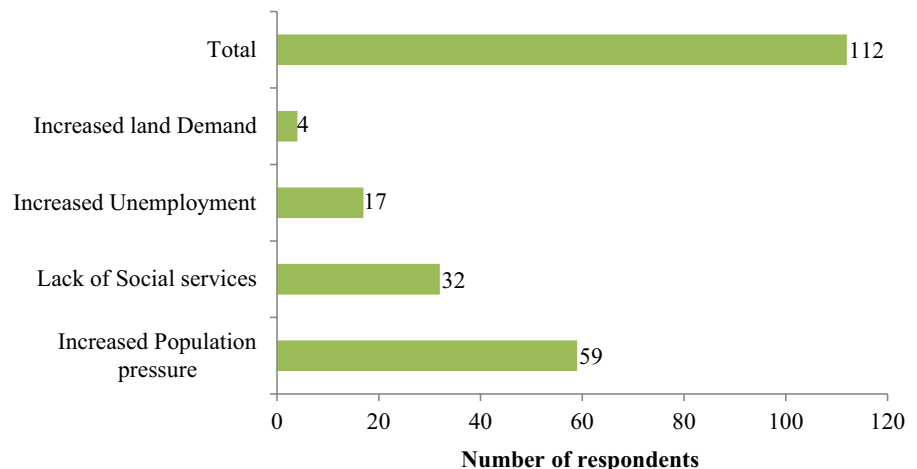
The survey results in Fig. 7 also indicated that 15.18% of the migrants were unemployed. This result is slightly consistent with Miheretu (2011) a study carried out in Woldia which showed that 18.6% of the migrants were unemployed during the survey period. In this regard, Chokoe and Meso (2017) conducted a study in South Africa and found

that a growing number of migrants contribute to the country's unemployment rate and make urban living difficult, and this ultimately leads to increased urban poverty. From this, we can conclude that urban ward migration had posed urban unemployment in the town despite little difference is observed in the two studies.

Key informant interviews was conducted with mayors and Kebele managers of the town regarding the effects of migration on basic social and infrastructure service provision, and urban environment. They confirmed that the growing number of migrants in the town demanding more social and infrastructure services, utilized urban resources to the maximum limit. In line with this, Abdul and Yu (2020) also showed that migration towards urban areas is experiencing an increase in urban poverty, overpopulation, environmental pollution, inadequate sanitation, overcrowding in housing, congested traffic, road accidents, and criminal activity.

Findings from FGDs and key informants interview also further supported the idea that migration can contribute to the growth of urban squatters and unplanned expansion of towns to look outside of the town's planned development due to a lack of urban land brought by population pressure. In an unofficial manner, they must relocate to scattered and isolated areas outside of the town. At fair pricing, or through any other method, such as squatting or informal acquisition, land can be obtained here. According to an empirical study conducted by Baye et al. (2023) on informal settlement in the town, 80% of the dwelling plots in peri-urban Woldia are

Fig. 7 The negative effects of migration at place of destination. Source Field Survey (2021)



unplanned, which is consistent with the findings of the survey, FGDs and interviews result.

This ultimately resulted in various social issues including housing, health, education, and other services, as well as an economic issue (urban unemployment) in the area. The finding is also consistent with Miheretu (2011), Evers (2012), Habtamu (2015), Chokoe and Meso (2017), Rana and Bhatti (2018), Abdul and Yu (2020), Ghafoor et al. (2021), Malik et al. (2020), and Baye et al. (2023).

Conclusion and recommendations

Conclusion

Ethiopian towns are expanding at a very rapid rate in recent years due to migration. Migration affects development in both rural and urban areas of Ethiopia in general and Woldia in particular. Recently, Woldia town has experienced major ongoing challenge resulted in migration as the survey result revealed.

The finding of the study shows that age and sex were identified as significant determinants of migration patterns, with a notable shift observed in the age composition of migrants before and after relocation. This migration pattern is consistent with Ravenstein's law of migration theory (1885) which stated that migration is age and sex selective process. 217 (79.2%) of male and 88 (72.73%) female migrants within their sex category were at the peak of their productivity age range of 25–44. The gendered and age-specific nature of migration highlighted in the research has implications for labor supply, economic productivity, and social cohesion in both origin and destination areas.

Males from rural origin made up 163 (59.49%) of the migrants to the town. The findings also depicted that 259 (65.57%) of married migrants arrived in Woldia and had completed formal education (primarily secondary or higher education). One of the key factors that attract migrants to the community is education. In the findings, level of education also has a greater likelihood of influencing the decision to migrate. Consequently, educated individuals are more likely to migrate from rural to urban areas in pursuit of better prospects and improved quality of life. This finding aligns with Teye (2018) and Berisso (2023), who ascertain that higher educational attainment

increases the likelihood of migration to urban areas, as individuals seek better opportunities and prospects.

The results of the study also show that among employed migrants (241), 209 (86.72%) of them held permanent jobs in the public sector. Woldia town draws migrants from various rural and urban areas in the nearby intra-woredas of the zone. Put another way, 194 (49.11%) of the stream of migrants arriving in the town were short-distance migrants, who were distinguished by their stepping and linked movements as they followed one another. In line with this, Ravenstein (1885) in his theory of law of migration asserted that the number of people migrating from area of origin to a particular destination decreases as the distance between them increases, and their flow of migration is also in stages as Fig. 1 revealed.

Although migration contributes positively to the development of Woldia town by supplying a strong labor force, it also presents challenges, including agricultural labor shortages and gender imbalances in the areas from which migrants originate. Understanding these dynamics is crucial for policymakers and stakeholders to effectively manage migration, mitigate negative impacts, and harness the potential benefits for sustainable development.

In general, the research sheds light on the role of education, religion, employment status, and place of birth in shaping migration patterns and destination choices. These socio-cultural and demographic factors influence individuals' migration decisions and have broader implications for urban planning, workforce development, and social integration initiatives.

Recommendations

In light of the aforementioned conclusions, the following suggestions were made:

- In this study, there was socio-economic development gap between rural and urban areas. Hence, government at all levels should create more job opportunities; improve the environment, basic social services and infrastructure facilities both in rural and urban areas to tackle demand. The government should also develop and carry out a balanced urban and rural development policy. Furthermore, local communities, civil society organizations, and migrant groups should be

actively involved in planning and decision-making processes to ensure that policies reflect their needs and priorities.

- There is a need to promote socio-economic opportunities. To address the root causes of migration, efforts should focus on enhancing socio-economic opportunities in both rural and urban areas. This may involve investing in agricultural development, job creation, and entrepreneurship initiatives to offer viable alternatives to migration.
- The town attracted a sizable migratory population from the nearby woredas, who were looking for better job and social amenities. Hence, the government should provide various social services, such as education, health, and electricity and water services to the rural areas to minimize the extent of rural–urban migration rather than concentrating the various elements of social amenities in a few urban centers.
- This study has depicted many challenges faced by migrants in the study area. These challenges demand immediate town’s administration and government attention to solve the issues of unemployment, overpopulation, inadequate infrastructure provision, emergence of slums, housing problems, and the problem of limited water supply. In order to address these problems, the government should incorporate development agencies and private organizations to expedite service provisions.

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Authors’ contribution Mulu Fasigo Fente: conceptualized and created the experiments; carried out the experiments; analyzed and interpreted the data; provided materials, analysis tools or data; wrote the article. Birhanu Girma Abebe: conceptualized and created the experiments; carried out the experiments; analyzed and interpreted the data; provided materials, analysis tools or data. Mintesnot Woldeamanuel Gebeyehu: conceptualized and created the experiments; carried out the experiments; analyzed and interpreted the data; provided materials, analysis tools or data.

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Data availability statement Datasets generated or analyzed during the study are available upon reasonable request from the corresponding author.

Declarations

Conflict of interest The authors declare that they have no known competing interests that could have appeared to influence the work reported in this paper.

Ethical approval and informed consent Prior to commencing data collection, the researcher has secured full ethical clearance from the Postgraduate Directorate Office of EiABC (Ethiopian Institute of Architecture, Building Construction, and City Development) under reference number EiABC/GPD/156./2019. This official communication, linked to academic establishments, has been dispatched to the Woldia Mayor’s office and pertinent kebeles, with copies distributed to the researcher, data collectors, and supervisors. Its purpose was to ensure that government institutions were thoroughly informed about the research’s goals and objectives and to solicit the required information and data.

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Exploring the nexus of migration dynamics and urban expansion: key drivers of horizontal spatial growth in Woldia Township, Ethiopia

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Ethiopia remains one of the least urbanized countries globally, although many of its urban centers, including Woldia, the capital of the North Wollo Zone, are undergoing rapid growth. Woldia has recently faced significant urban challenges due to its expanding horizontal growth. One of the major issues associated with this growth is the increasing demand for land and space, driven by population pressure, largely attributed to migration. This migration has led to the annexation of agricultural land at the rural periphery, further contributing to the town's horizontal expansion. This study aims to explore the key drivers behind the horizontal growth of Woldia, particularly in its peripheral areas. Data were collected through a structured questionnaire administered to a randomly selected sample of 395 respondents, complemented by key informant interviews and secondary data sources. Both qualitative and quantitative analytical methods were employed. The findings indicate that poor social services and poverty in migrants' areas of origin are the primary push factors. Conversely, improved social infrastructure and job opportunities at the destination are the main pull factors. Consequently, the influx of migrants has resulted in significant pressure on peri-urban areas, where housing availability and accessibility remain limited. The study recommends that local government officials and urban planners enhance their understanding of migration dynamics to effectively manage the town's spatial expansion and address the challenges of accommodating a growing population.

KEYWORDS

drivers, Ethiopia, migration dynamics, nexus, urban expansion, Woldia

1 Introduction

The increasing number of people residing in urban areas results from the general increase in the human population and the continuous migration of individuals from rural to urban areas (Clement et al., 2021). The number of people living in urban areas has increased, which is one of the most significant shifts in human life during the last few centuries (Perry et al., 2022). In this regard, Aerni (2016) stated that migration will play a major role in shaping the demographics of urban areas in the 21st century. Internal migrations will inevitably shape and change the urban environments of developing countries.

With migratory flows occurring within countries and across borders worldwide, migration is truly a global problem. Migration can be categorized as internal and external,

depending on the nature of the political and geographic border crossings. External migration is the movement of people across international borders, whereas domestic migration is the movement of people within certain political boundaries (Hanlon and Vicino, 2014). Moreover, Fentaw (2020) noted that one of the fundamental and significant elements of population dynamics in urban areas is migration, which is defined by the migrant's conscious and reasonable decision. Some types of checks and limits are placed on prospective migrants by international migration. Internal migration, however, is much more feasible. In most developing nations worldwide, internal migration has significantly impacted government policies and initiatives. According to Chernyak and Chernyak (2019), there are 763 million internal migrants and 244 million external migrants worldwide. Internal migration, or the movement of people within one's own country, appears to be commonplace when one considers spatial movements of people.

More than half of the world's population already resides in urban areas. This trend is anticipated to continue in the 21st century, with emerging countries having the fastest rates of development (Alliance, 2015). In this regard, UN-Habitat forecasts that 66% of the world's population will be urbanized by 2050. Due to urbanization, 2.5 billion people will reside in urban areas worldwide by 2050. As a result, about 90% of the increase will be found in urban areas of developing nations (UN-Habitat, 2014).

Furthermore, Mohammed et al. (2020) noted that worldwide urbanization is accelerating, with developing nations now seeing the fastest rate of urban growth. In line with this, Kundu and Pandey (2020) asserted that an important turning point in human history occurred in 2007 when the world's urban population finally surpassed its rural population. Our planet is currently more urbanized than it has ever been, and forecasts suggest that this trend will increase over the next several decades. In light of this, Zhang (2016) reasoned out that these dynamics of urbanization in the globalization era of the 20th and 21st centuries resulted in migrant flows toward urban centers. The migration of individuals from rural to urban areas is pervasive and significantly changing our way of life. Currently and in the future, the developing world will see the fastest rates of urbanization.

The rate of urbanization is increasing with time in developing and poor countries. In this regard, Zhang (2016) found that the majority of the urban population growth will occur in Asia, Africa, and Latin America, which will account for 54%, 32.5%, and 6.8% of the overall urban population growth, respectively. In many countries, urbanization brought on by migration causes urban areas to expand horizontally into adjacent rural areas, where farming is the main source of income for the local population (Mengist, 2022). Moreover, Fetene et al. (2019) noted that due to urbanization, rural farmland on the periphery of existing built-up areas is being transformed in significantly to meet the increased demand for urban land. Tassie (2018) also claimed that peri-urban areas are among the most susceptible to the swift conversion of a significant portion of prime agricultural land to urban areas, which results in the loss of livelihood assets for farmers.

Around the world, a significant quantity of farmland is consumed by horizontal urban growth into the surrounding periphery (Mohammed et al., 2017). Moreover, Baye (2009), in his empirical studies, found that horizontal spatial growth of urban areas consumes

prime agricultural lands in their urban periphery, which has resulted in a significant decrease in the amount/quantity of agricultural/crop/lands. By 2030, an estimated 1.2 million km² of urban land will be converted worldwide, assuming all areas with a high probability of urban expansion transform (Seto et al., 2012). Regional differences in urban growth rates exist. Despite regional variations in the contributions of population growth, the annual growth rate of urban land expansion was 7.48% in China, 4.84% in India, and 4.32% in Africa (Seto et al., 2011).

As more people live in urban areas across Africa, there will be more space for further growth (Seto et al., 2012). Amrevurayire and Ojeh (2016) noted that between 2000 and 2030, the urban population in Africa is projected to double. As a result, formal housing shortage is ongoing migration to urban areas. More, urban people are now estimated to live in informal housing on the periphery. In line with this, Talema and Nigusie (2023) asserted that most Ethiopian urban centers, especially Addis Ababa, the capital, and the surrounding towns, have been growing horizontally towards peri-urban areas to accommodate the country's growing urban population and economic activity.

Urbanization is anticipated to will play a significant role in Ethiopia's development in the near future. Based on available data, Ethiopia's urbanization is mostly caused by natural population growth, rural-urban movement, and the reclassification of rural land (Negari and Kumar, 2019). In line with this, the World Bank Group (2015) noted that natural growth accounted for 40% of the urban population growth before 2018, with rural-urban migration coming in second at 33% and reclassifying rural villages to urban centers at 24%. However, given the country's rapid rate of urbanization, rural-to-urban migration is predicted to surpass natural growth. According to Tegenu (2010), despite a rise in urban-urban migration, the majority of Ethiopia's migrants, who have made up about half of the country's urban population for the past 20 years, came directly from rural areas.

Compared to countries in Sub-Saharan Africa (SSA), where the average level of urbanization is 37%, Ethiopia has one of the lowest (23.1%) levels of urbanization (Weldegebriel et al., 2021). However, its urbanization rate (4.8%) threatens the country's development because it lacks the necessary planning skills and political and economic institutions (Koroso et al., 2021).

According to Lamson-Hall et al. (2022), while a high natural rate of population growth contributes to horizontal urban expansion in Ethiopia; it is also a result of significant migrant patterns that are triggered by a variety of factors, including new job possibilities in urban centers, displacement from ethnic conflicts, and difficulties in the rural economy due to drought. Besides, urbanization has been fueled by a number of social, economic, and environmental factors (Kebede, 2017).

As urban areas expand and develop, their inhabitants need more space or floor area. In line with this, Angel et al. (2021) stated that urban areas have acquired floor space to grow in three ways. (1) by extending horizontal growth (2) by filling up the empty spaces between buildings, and (3) by building upwards (vertical growth). Usually, these three methods have been combined. However, the main focus of this study is the first way, which is the horizontal growth of the town.

Currently, Woldia is faced with various urban challenges. One is the town's rapid horizontal expansion and unplanned growth into the peripheral areas. The town is not adequately governed by appropriate

planning (Baye et al., 2020). This physical growth happened because of the growing population which resulted in a natural increase, rural-to-urban migration supported by urban-to-urban migration primarily from adjacent small towns, rural districts and intra-migration from the center of the town to the periphery. Baye (2009) stated that urban spatial growth consumes prime agricultural lands in their urban periphery, which has resulted in a significant decrease in the amount/quantity of agricultural/crop/lands. Furthermore, Mohammed et al. (2017) found that government policies that expropriate prime agricultural land from the periphery due to urban expansion are the reason behind Woldia town's horizontal growth. These consist of: (1) public sector projects like roads, universities, water and sanitation facilities, health stations, and schools; (2) industrial zones like manufacturing industries; (3) residential housing for urban residents and government and private employees; and (4) private investment like private hotels and mixed land use.

Different scholars such as Bekele (2005), Getahun (2005), Baye (2009), Miheretu (2011), Melesse and Nachimuthu (2017), Mohammed et al. (2017), Teshome and Belete (2017), Tassie (2018), Fetene et al. (2019), Kebede (2017), Baye et al. (2020), Fentaw (2020), Kassegn and Endris (2020), Weldegebriel et al. (2021), Mengist (2022), Baye et al. (2023), and Talema and Nigusie (2023) have done empirical works on urban and migration-related topics. While these studies have contributed valuable insights into the general causes and consequences of urbanization and migration, they have not specifically addressed the nexus between migration and horizontal spatial growth in Ethiopian towns. This gap is particularly evident in the case of Woldia, where such an analysis has not been previously undertaken. Therefore, the uniqueness of this study lies in its focus on the drivers of horizontal spatial growth in Woldia and its aim to fill the existing research gap by examining the specific relationship between migration patterns and spatial expansion in this urban context.

The primary objective of this paper is to investigate the key drivers behind the peri-urban horizontal spatial growth of Woldia. Specifically, the study aims to: (1) identify the main push and pull factors that contribute to the horizontal expansion of the town, (2) assess the population growth trends of Woldia from 1967 to 2020, and (3) examine the pattern and spatial growth rate of the town from 1965 to 2020. By addressing these objectives, the paper seeks to provide a comprehensive understanding of the dynamics influencing the town's spatial development and population changes over the past several decades.

1.1 An empirical review of related works

1.1.1 Migration-led horizontal spatial growth and drivers of migration

1.1.1.1 Overview of migration-led horizontal spatial growth

The physical expansion of urban areas can be explained through both economic, functional, and demographic perspectives. Economic functional definitions of urbanization emphasize the spatial concentration of productive activities, such as services and industries, rather than focusing solely on population dynamics. In contrast, demographic definitions of urbanization are primarily concerned with

factors such as population size and density. This study examines horizontal growth from a demographic perspective, focusing on population changes rather than economic functions, as discussed by Tegenu (2010).

The main cause of urbanization is migration. Internal migration and net migration to urban areas cause a nation's population's urbanization. International migration can also have an impact on urbanization if it primarily impacts either rural or urban populations, but it is rarely a major effect when urbanization and growth are occurring at a rapid pace. Rapid urbanization frequently coexists with rapid overall population growth, particularly in rapid urban population growth (Tacoli et al., 2015).

The origins of urban growth are viewed from quite different angles among scholars. For instance, Angel et al. (2016) asserted that the horizontal growth of human settlements always increases in tandem with population growth since newcomers need land for houses and services. Moreover, Jedwab and Vollrath (2015) stated that demand for land and space rises over time as population pressure in urban areas increases due to migration.

Furthermore, Lamson-Hall et al. (2022) stated that most residents may no longer be able to access land in the existing area when urban populations are increasing quickly. Therefore, land can be developed through the occupation of peri-urban areas to facilitate the expansion of enterprises that need more space, the densification of crowded areas, or the arrival of new residents, such as through rural-urban migration.

Additionally, Caldeira (2017) and Mabin et al. (2013) noted that the urban periphery also becomes home to a large number of new migrants. Due to a rise in urban population, the total built-up area of developing countries doubled between 2000 and 2015 (Pesaresi et al., 2016). As urban areas expand to the periphery of rural areas, the natural environment and landscape are changed because they use more resources and land. Furthermore, climate change, pollution, and biodiversity loss may follow from this (McGranahan and Satterthwaite, 2014). Singh (2014) also stated that the urban environment, economy, government, infrastructure, society, shelter, and urban landscape are all changing as a result of urban centers' rapid growth.

Spatial growth is a phenomenon that occurs as urban space expands and is a crucial indicator of how quickly urban areas in developing nations are expanding. As many urban areas expand swiftly onto their periphery, previous villages and farmlands are engulfed and turned into urban areas (Bhatta, 2010). Moreover, Mekuriaw and Gokcekus (2019) stated that urban areas in developing nations are expanding in a dynamic, diversified, chaotic, and increasingly expansive manner. This shifts land usage from rural to urban activities and impacts the physical forms of the environment and the peri-urban interface's social and economic characteristics. Similarly, Mengist (2022) found that as urban areas grow, urban areas expand into the rural peripheries, forcing the government to evict farmers already living there and earning a living from farming.

According to Tegenu (2010), the following characteristics define migration-led urbanization: (a) an increase in the number of towns (multiplication of the points of concentration); (b) the development of the rural market functions (handicraft, trade, and service); and (c) an uneven growth in the size and spatial distribution of towns ("distorted location incentives").

1.2 Migration-led urbanization in Africa and Ethiopia

The countries in the Global South are where the anticipated urbanization is concentrated. Although they are the least urbanized, sub-Saharan African nations are growing at the fastest rate, 4.1% annually. Rural-to-urban migration is the primary cause of urban growth in this region (Tumwesigye et al., 2021). In line with this, Lamson-Hall et al. (2019) pointed out the United Nations Population Division estimated that 55% of people in Sub-Saharan Africa will live in urban areas by 2050. Over the next three decades, Ethiopia will see the development of urban areas that will last for many generations.

The extent of rural–urban mobility will affect projections of future urban growth, and migrants' requirements differ from those of urban dwellers even though migration to urban areas is evident in sub-Saharan Africa (Lamson-Hall et al., 2022). Additionally, Tacoli et al. (2015) noted that one out of every three new residents of Sub-Saharan African urban areas was a migrant from the rural areas. The rural–urban movement contributed to the region's urban population growth. The study also found that more than two out of every five individuals added to Sub-Saharan African urban areas over the next three decades will be rural migrants.

The United Nation (2018) reports that urban areas in sub-Saharan Africa are expanding at a faster rate than urban areas worldwide and that over one-third of the additional people living in urban centers over the next 30 years will reside there. By 2050, sub-Saharan Africa's urbanization rate is expected to rise from 41.4% in 2020 to 58.1%. According to Lamson-Hall et al. (2022), Sub-Saharan Africa is at the epicenter of the world's urban growth, with urban areas accounting for over half of this growth, which comes from rural-to-urban migration, which accounts for 43%.

Due to urban centers' proximity to the periphery, rural populations will have access to pre-existing networks within urban regions, making the move easier (Awumbila, 2014). According to Rondinelli (1983), adjacent urban centers are areas of arrival and progressively important components of the urban system that “bridge the gap between the major urban centers and the rural hinterlands.” The growth of existing settlements due to natural rise and rural–urban migration is creating a new system of adjacent urban centers in several African nations.

Awumbila (2014) also pointed out that the rapid urbanization of Sub-Saharan Africa has resulted in migration, and the majority of the population from rural to urban areas has been characterized as possibly the most significant development since independence in the majority of African nations. African governments and outside observers have legitimately been concerned about the severe urban demographic strain for decades.

In most developing nations, including Ethiopia, the majority of urban population growth is accommodated by the fast horizontal urban expansion from the urban center to the periphery. Migration is the main driving force behind this phenomenon. Furthermore, Chandel and Mathewos (2023) identified that a number of reasons have contributed to the horizontal growth of urban areas in Ethiopia, including natural population growth, rural–urban migration, and government policies that support urbanization and economic development.

According to the Central Statistical Authority (CSA) of Ethiopia, Ethiopia's urban population has been significantly impacted by migration, which is a key driver of the country's urban growth. Rural–urban and urban–urban migration have both occurred in the country. Numerous studies showed that the proportion of migrants to Ethiopian urban centers sharply rose. More than 73% of urban migrants were from rural areas, and the percentage of movers from urban areas was above 40%, which shows an increasingly widespread level of rural–urban movement (CSA, 2008).

Table 1 shows the nexuses between the population (driven by migration) and the horizontal spatial growth rate of urban centers in East African countries that are used as case studies. Accordingly, these urban centers are urbanizing more quickly, partly because of a significantly higher rate of migration from rural to urban areas (Lamson-Hall et al., 2022). Recent data examines urban centers' role in integrating these new migrants and assesses the extent of this rural–urban migration.

Furthermore, based on satellite imagery analysis, the study found that these urban centers have an average annual population growth rate of 5.2% and an average annual urban area expansion rate of 6.1%. As the study indicates, these urban centers will, on average, double over the next 12 years if current trends continue. This suggests that urban centers are growing at an alarming rate in terms of both people and territory, which causes urban centers to engulf new areas at the periphery.

TABLE 1 Population and urban extent growth rate of sub-Saharan African urban centers (case studies of Eastern African urban centers).

City name	Country	Population (2019)	Urban extent (hectares) 2019	Population growth rate % (2000–2019)	Urban extent growth rate % (2000–2019)
Arua	Uganda	174,628	3,553	6.9	5.7
Jinja	Uganda	182,455	4,945	7.2	7.6
Mbale	Uganda	171,746	3,652	4.8	5.8
Gulu	Uganda	198,062	4,177	5.7	5.5
Dire Dawa	Ethiopia	182,455	4,946	7.1	7.6
Adama	Ethiopia	171,746	3,652	4.2	5.8
Jigjiga	Ethiopia	198,062	4,178	5.5	5.5
Gabiley	Somalia	30,734	490	2.2	5.4
Borama	Somalia	174,628	3,554	6.2	5.7

Source: Lamson-Hall et al. (2022), p. 15.

1.2.1 Key drivers of migration

Migration to urban areas, in particular, has more complicated causes. For many reasons, people relocate. Push and pull factors are the two main categories into which the reasons for migration are typically divided (Delango, 2019). According to Everett Lee's theory, migration is selective and is impacted by both push and pull variables (Urbański, 2022). Moreover, Bean and Brown (2014) stated that Lee categorized four variables of push and pull factors of migration that people decide to migrate. These are (1) the areas of origin, (2) the areas of destination, (3) personal factors, and (4) intervening obstacle-related variables. Thus, migration can be seen as a wise choice made by people to take advantage of chances that are insufficient in their own area. In this regard, Abeje (2021) also asserted that Ethiopia has a high rate of rural–urban migration due to a series of causes, including push factors in the rural areas and pull factors in urban areas. Rural push factors have been the main driving forces for the swift shift of people from rural to urban areas.

Thus, the study aims to identify the different push and pull factors, such as economic, social, environmental, and political drivers, that are likely to affect people's decisions to migrate and their implications on the horizontal growth of towns. All of these have the power to influence someone's goals and choice to relocate. They should not be viewed as isolated elements but rather as interconnected and complex, supporting or hindering one another. The key drivers of migration include:

1.2.1.1 Economic drivers

Economic opportunity disparities, especially those related to employment and wages, have long been seen to be the main causes of migration. Accordingly, Todaro and Smith (2009) claimed that migration between rural and urban areas is generally regarded as a rational action and that the choice to migrate is determined by considering the advantages and disadvantages. According to this model, migrants react to variations in expected rather than real earnings between rural and urban areas, and they continue to migrate until expected and actual incomes in each region are equal. So, the deciding element, in this case, is thought to be the person's logical cost–benefit analysis of an existing wage gap between their place of origin and destination, which serves as a stand-in for improved economic possibilities.

Moreover, Henderson (2010) stated that rural communities are forced to migrate and travel longer distances to urbanization hubs as development becomes more concentrated. In addition, Ravenstein (1885) noted that rural-to-urban movement was the primary driver of urban growth and that economic factors were the main drivers of migration. In light of this, Clement et al. (2021) pointed out that seasonal economic gains and personal fulfillment are the main drivers for people who migrate to urban areas. Additionally, Van Dijk and Franssen (2008) stated that poor living circumstances and ongoing famine are the main causes of the fast rate of urbanization in Ethiopia, which forces people to migrate from rural areas to urban areas in search of better employment opportunities.

Moreover, the number of opportunities determines the magnitude of migration. In line with this, Stouffer (1940) claimed that the size of migration is determined by the total of the push and pull forces at the origin and destination area. Greater chances draw more people and make a location a destination. However, a

location with few opportunities turns into the starting point. Overall, it has been demonstrated that a major motivating factor for rural–urban migration is the absence of economic prospects in the region or place of origin and/or the availability of greater chances elsewhere.

1.2.1.2 Social drivers

Poor social services and inadequate infrastructures encourage people to migrate. In this regard, Kassegn and Endris (2020), in their review study of “Determinants of internal migration in Ethiopia,” identified that inadequate social services and poor infrastructure are the primary driving forces behind migration in rural Ethiopia. Moreover, Farrell (2018) noted that people in rural areas are driven to urban areas in search of a higher quality of life due to push factors, including poverty and a lack of basic amenities and other services. On the contrary, better education, health care, security, and other urban amenities attract people from rural areas to migrate to urban wards. People move to urban areas because they believe they are hubs for growth and education. According to Zhang (2016), urban areas are the driving forces behind social, cultural, and technological advancements and offer more learning and sharing opportunities.

Urban ward migration is determined by various social factors, including the presence of pre-existing social networks that can facilitate the migratory transition or the accessibility of transportation facilities (Haug, 2008; Van Hear et al., 2018). For example, social networking at the destination area (via family, friendship, and community relationships) can speed up the migration process by providing resources or helpful information and reducing the risks and expenses of relocation for prospective migrants. Accordingly, social networks can assist migrants in locating housing and employment in their new location (Cummings et al., 2015). Access to information before and during the migration process is essential to lowering risks, and it also offers the resources required for the route.

1.2.1.3 Environmental drivers

Environmental issues have drawn more attention in the context of migration in recent years. Soil degradation, drought or flooding, temperature or rainfall anomalies, and natural disasters have all been identified as causes of large-scale migration flows. Given this, Henderson et al. (2017) pointed out that populations moving from rural to urban areas in Sub-Saharan Africa are significantly impacted by climate change. In Ethiopia, individuals typically leave rural areas and migrate to urban areas to avoid unfavorable conditions. In light of this, Getahun (2005) identified that the main push factors in Ethiopia include a declining supply and quality of farmland, ongoing drought, conflict, and other similar issues. Besides, Jabal et al. (2022) pointed out that the decline of agricultural yields brought on by climate change poses a challenge to rural livelihoods, particularly in areas that are stressed by moisture. Since climate change is decreasing farm productivity and making food self-sufficiency more difficult, mass migration to urban areas is typical. This will accelerate urbanization, which is happening quickly in poor nations like Ethiopia facing food insecurity.

Furthermore, Marchiori et al. (2012) claimed that rainfall and temperature anomalies in Sub-Saharan Africa increased both rural-to-urban migration and international out-migration. On the other hand, a conducive climate and good urban environment attract migrants to urban areas. In line with this, Melesse and Nachimuthu

(2017) and Obijekwu et al. (2019) stated that better climatic conditions and a good urban environment may also attract people to relocate to different urban areas.

1.2.1.4 Political drivers

The development of urban infrastructure-related projects such as roads, dams, industrial parks, slum upgrading, or redevelopment of the center of urban areas by the government is considered one of the drives forcing people to migrate to other areas. Accordingly, Mohammed et al. (2017) claimed that local government buildings, manufacturing industries, roads, telecommunications, stadiums, health stations, recreational areas, and industrial parks were among the urban development projects in Ethiopia that caused migration. These have contributed to the horizontal expansion of urban areas across the nation and created a demand for peri-urban land on the outskirts. Furthermore, according to Dires et al. (2021), Ethiopia's horizontal urban growth is a result of the peri-urban families' farmland being taken away for infrastructural development, which drives people to migrate. In this regard, Bekele (2005) also stated that the main causes of horizontal spatial growth in Ethiopia include population increase, an increase in household income, subsidies for infrastructure projects like roads, inefficient land use, social issues in central urban areas, and poor land policies.

The government's reclassification of rural areas into urban areas for administrative purposes is another factor in the migration of people from rural areas to urban areas. In this regard, Ahmed and Ishrat (2020) asserted that the migration of people from rural to urban areas, coupled with the reclassification of rural areas as urban areas, has been very significant since it has changed the rapid expansion of urban centers, and it is still a crucial link in the chain of urban growth. Moreover, Montgomery et al. (2013) asserted that political or administrative processes are mostly responsible for the reclassification of nearby rural areas under urban administrative settings as sites of expansion to satisfy the demands of urban land for diverse activities.

From the literature review discussed so far, we can generally identify that the main drivers of migration, push factors at the place of origin (rural and/or urban areas) and pull factors at the place of destination (urban areas), have played a major role in increasing the urban population. This, in turn, leads to the horizontal growth of urban areas and the subsequent encroachment of the nearby valuable farmlands in Africa in general and Ethiopia and Woldia in particular. As a result, there was a demand for farmland in the periphery being encroached upon by urban usage to accommodate the growing population pressure from migration recently. Figure 1 depicts the main causes of migration and its implication for horizontal spatial growth.

2 Research methods and materials

2.1 Description of the study area and study site selection

Geographically, Woldia lies astronomically between 110° 48' N–110° 50' N latitudes and 390° 34' E–390° 36' E longitudes. The town is situated at an average elevation of 2000 meters above sea level and is

found in the North Wollo zone of the Amhara National Regional State, Ethiopia. It serves as the capital of the North Wollo Zone, Guba Lafto, and Woldia Woreda. The town's name, "central meeting place," reflects its historical role as a hub for goods redistribution to nearby areas (Baye et al., 2020). Woldia connects Addis Ababa, the national capital, along the primary north–south highway with Mekele in Tigray. It is approximately 521 km from Addis Ababa, 360 km from Bahir Dar (the regional capital), and 180 km from Lalibela, a significant tourist destination. The study area lies within the northwestern highlands and associated lowlands, specifically within the northern-central massifs subdivisions, with an average elevation of 2,000 meters above sea level.

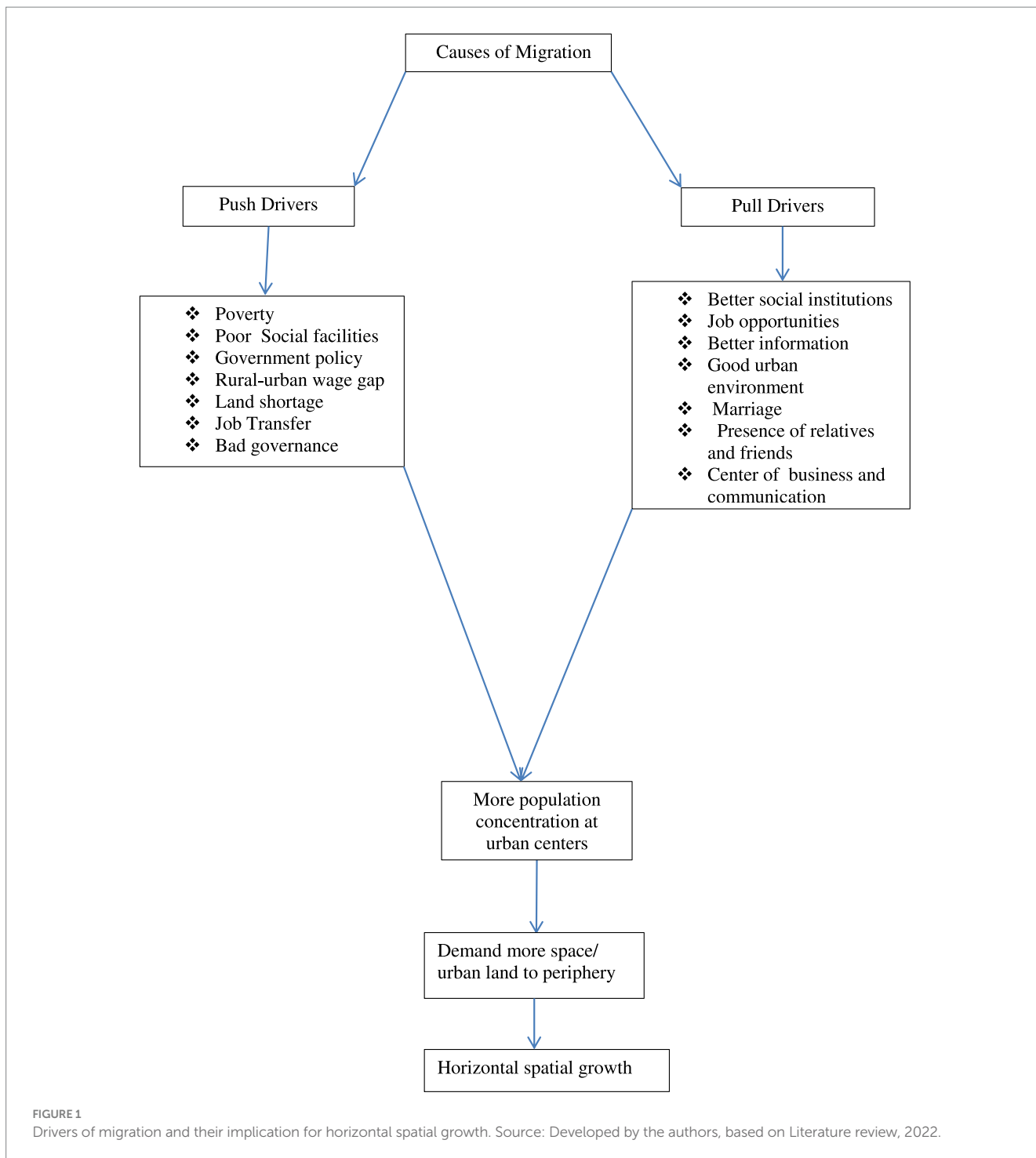
Woldia is a major transportation node where three significant highways converge: Addis Ababa–Dessie–Woldia, Bahir Dar–Gondar–Woldia, and Mekele–Woldia (see Figure 2). These highways not only connect Woldia to various parts of the country but also offer convenient access for commuters to the town center. Consequently, Woldia serves as a key junction connecting Mekele to the north, Djibouti to the east, Addis Ababa to the south, and Bahir Dar and Gondar to the west. It is also a main access route to Lalibela, a prominent religious and tourist site. The town is bordered by Mount Gubarja to the east and Mount Gebrael/Ariro to the north, with these topographic constraints channeling its rapid expansion primarily southward, northwestward, and westward. To the west of Woldia, the flat plains of Mechare provide suitable areas for further growth, extending to the Tikur Wuha and Melka Demo rivers (Baye, 2009).

Although Woldia lacks a major river, the Shelle stream flows from the north to the southwest, originating from Gebrael Mountain and passing near Woldia University. To the south, the flat Mechare plain and the gentle Guba Lafto escarpment provide potential for further expansion, which is limited only by Mount Guba (locally known as Guba Terara). This geographic layout initially led Woldia to expand in a linear pattern. The town has a compact, almost hollow shape when viewed from above, displaying a cohesive urban form.

Despite the limiting effect of the Guba Lafto escarpment on southern expansion, the construction of a 12-km highway from Jeneto Ber to Woldia through Guba Lafto has been a significant factor enabling growth in this direction. Other contributors to Woldia's expansion include the level terrain of Mechare, the establishment of Shehi Ala Mudi Stadium, Woldia University, Woldia College of Teacher Education, Woldia Polytechnic College, the Jeneto–Woldia Highway, and the Woldia–Gondar–Bahir Dar Highway (Baye, 2009). A designated industrial zone and an increase in business investments have further stimulated the town's economic growth. Financial institutions have also been increasingly supportive, providing investment opportunities and urban loan options to facilitate development. However, promoting sectors like tourism, hotel investment, transportation, commerce, and agriculture remains essential for sustained growth and regional development.

2.2 Study site selection

Woldia has recently been divided into three sub-cities: Taitu Bitul, Ras Ali, and Yeju. Taitu Bitul encompasses kebeles 01, 02, and 04 from the study areas; Yeju includes kebele 05, and Ras Ali covers kebeles 03,



06, and 08. These peri-urban areas have been intentionally selected for study, as Woldia’s spatial growth is especially prominent along the fringes of these kebeles.

The study area is located on the urban outskirts of Woldia town in the North Wollo zone of the Amhara Regional State. The primary reason for selecting these locations is their visibility as sites of rapid spatial growth at the town’s periphery. Specifically, the most suitable areas for current and future urban expansion are the level area west of Woldia extending toward the “*Tikur Wuha*” (Black Water) River, the southern and southwestern flat plain near Mechare, and the northern and northwestern zones around

Adengur and Michael. This growth direction is due to the limitations posed by steep terrain on the eastern margin at Kore and the northeastern slope of Mount Gabriel.

These sites were selected based on the following criteria: (1) locations where rapid spatial growth has encroached upon prime agricultural land on the rural periphery for diverse urban purposes, (2) areas with relatively few physical barriers to growth and adequate land supply, (3) areas experiencing an influx of migrant populations constructing both formal and informal housing, and (4) peri-urban zones that offer transitional environments for migrants, blending rural and urban

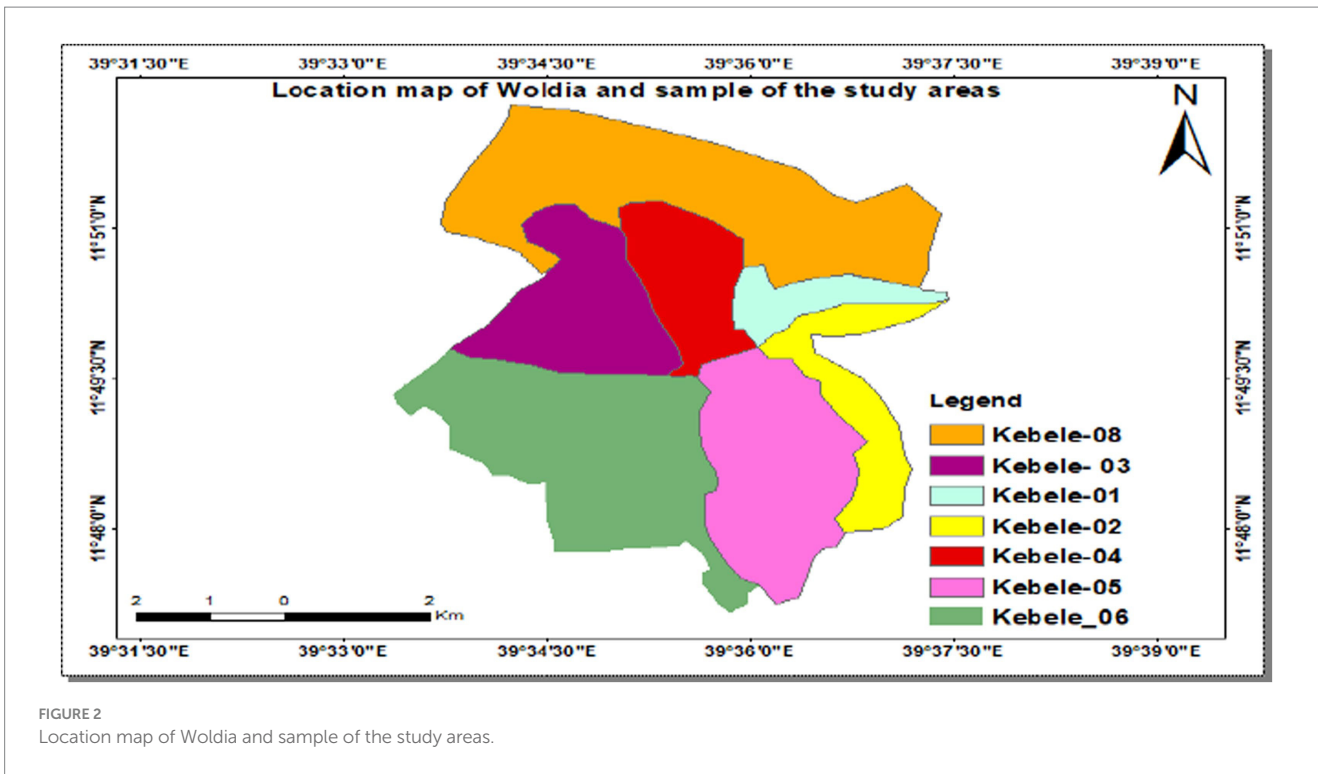


FIGURE 2 Location map of Woldia and sample of the study areas.

characteristics to facilitate their adaptation to urban life. Consequently, these areas play a crucial role in supporting the smoother integration of migrants into the urban structure. Figure 2 illustrates the location map of Woldia town and highlights the study kebeles.

2.3 Study population, sampling technique, and sample size

The study’s target population comprised various groups, including rural-to-urban migrants, intra-migrants (individuals relocating from the core of Woldia to its periphery), urban-to-urban migrants, as well as town mayors, officials from the North Wollo Zone Workers and Social Affairs Office, municipal managers and experts, kebele officials, and urban land administrators. According to Fasigo et al. (2024), the town recently had 10 kebeles, six classified as urban, while the remaining four were rural. Consequently, the sample for this study was drawn from six urban kebeles and one rural kebele close to the town, Adengure-Gabriel, where spatial growth is particularly evident.

According to data obtained from the Woldia Woreda Health Department, the entire urban population of the town in the year 2020 /21 was 89,707. Of these, 65,465 were residing in the town’s study areas. Of 65,465 populations, 37,887 of them were migrants. The sample size was determined by using the formula of Yamane (1973) cited in Fasigo et al. (2024) while taking the margin of error of 5% and the degree of confidence (95%) (Table 2).

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

where N = target population
 e = sample error estimated (0.05)
 n = total sample size

$$\text{Therefore, } n = \frac{37,887}{1 + 37,887(0.05)^2} = 395$$

From the total migrant population of 37,887, a sample of 395 migrant households was selected using a simple random sampling method based on kebele population lists. After establishing the sample size, lists of migrants were obtained from each kebele. The researcher (corresponding author) then selected a random starting number. For instance, in a kebele with a migrant population of 4,500 and a target sample size of 47, dividing the population by the sample size yielded approximately 96. A random number between 1 and 96 (in this case, 30) was chosen as the first sample point. The second sample was determined by adding 96 to the starting number (yielding 126), followed by the third sample at 222, the fourth at 318, and so on until the required sample size was reached. This process was replicated across all selected kebeles.

2.4 Data sources and methods of collection

2.4.1 Data sources

To produce reliable and comprehensive information, the study used both primary and secondary data. Primary data were collected from migrant respondents, mayors, zonal experts, municipality officials and experts, and kebele managers through questionnaires and key informant interviews. Secondary data were collected from census

TABLE 2 Sample distribution of the study sites.

Name of Sites/Kebeles'	Total population	No. of migrants	Sample size distribution
Kebele (01)	9,502	4,300	$(4,300/37,887) \times 395 = 45$
Kebele (02)	9,501	2,500	$(2,500/37,887) \times 395 = 26$
Kebele (03)	11,042	9,200	$(9,200/37,887) \times 395 = 96$
Kebele (04)	11,042	5,200	$(5,200/37,887) \times 395 = 54$
Kebele (05)	8,301	4,687	$(4,687/37,887) \times 395 = 49$
Kebele (06)	9,940	7,500	$(7,500/37,887) \times 395 = 78$
Kebele (08)	6,137	4,500	$(4,500/37,887) \times 395 = 47$
Total	65,465	37,887	395

Source: Woldia Woredas' Health Department, 2021.

results, official documents and records of the city administration, the town municipality, published and unpublished data, different research papers, books, the internet, and articles relevant to the problem under investigation.

2.4.2 Data collecting procedures and tools

2.4.2.1 Data collecting procedures

Given that Amharic is the working language of the town and is widely understood by most migrant residents, the final questionnaire was first prepared in English and then translated into Amharic. Three lecturers from Woldia University—two from the Department of English Language and Literature and one from the Department of Geography and Environmental Studies—were consulted during the translation process.

A pre-test was conducted on selected study sites to evaluate the initial questionnaire draft for any ambiguities, misunderstandings, or other issues to facilitate the research process. An initial draft pilot was tested with 10 migrant respondents (six men and four women) from the Admas Bashager, Mechare, and Yejugenet sites before the main survey commenced. These pilot respondents were part of the population from which the sample would be drawn and selected to represent the broader attributes of the migrant population.

The survey covered 395 households through home-to-home visits conducted by seven enumerators (six males and one female). These enumerators included three teachers from Woldia Preparatory Schools, two from Woldia High School, and two grade 12 students, all selected according to specific criteria and trained for field data collection. Additionally, four supervisors (all male and lecturers from Woldia University) oversaw data collection at each site. Ultimately, 395 respondents completed the questionnaire, supplemented by 12 key informant interviews, totaling 407 participants across various categories, as summarized in Table 3.

2.5 Data collection tools

2.5.1 Questionnaire

The questionnaire served as the primary data collection tool in this study due to its self-administered nature, which enables simultaneous distribution to a large number of individuals. The survey included both closed and open-ended questions. Given the time constraints, the questionnaire allowed efficient data collection

TABLE 3 Type of instruments and number of sample participants for data collection.

	Instruments/Tools/	Number
	Interview	12
	Questionnaires 395	395
Total		407

Source: Field Survey, 2021.

from a large respondent pool. Additionally, it minimized interviewer bias and supported the use of a larger sample size, thereby enhancing the reliability and consistency of the findings. Before respondents received the questionnaire, the researcher explained the study's purpose and anticipated outcomes. Participants were encouraged to ask questions and clarify any uncertainties about the questionnaire before responding. This comprehensive overview of the study helped reduce the likelihood of inaccurate responses.

2.5.2 Interview

The study employed structured and semi-structured interviews to collect qualitative data from key informants through face-to-face interactions. Prior to each interview, an appropriate location was arranged, and the researcher introduced himself, carefully explaining the research's purpose and assuring participants of the confidentiality of their responses. The interview questions were then administered according to a planned schedule.

To meet the study's objectives, interviews were conducted with two mayors and two experts from the North Wollo Zone Workers and Social Affairs Office, focusing on the main drivers of migration. Additional interviews included one manager, two municipal experts, and two urban land administration officers to obtain information on land issues and spatial growth. Five kebele managers were also interviewed to gather insights on basic social services. Each interview lasted between 20 and 70 min, averaging 45 min. After each session, the researcher expressed sincere appreciation to all participants for their valuable contributions to the study's success.

2.6 Methods of data analysis

Data gathered through various methods served as both inputs for the analysis being studied and essential sources for

understanding the main drivers behind migration and how they affected the town's horizontal growth. The analytical techniques for examining migration drivers and their impact on urban expansion at the periphery were employed in both quantitative and qualitative analysis. Therefore, after the necessary data had been gathered and coded, the quantitative parts were analyzed using Excel and SPSS version 21, utilizing descriptive methods such as tables, frequencies, percentages, and graphical representations. The qualitative method was employed to describe the numerical values of the findings in statement form and included an analysis of respondents' attitudes, opinions, and suggestions.

2.7 Ethical concerns and considerations

2.7.1 Consent to participate

After obtaining the necessary approvals and developing the data collection tools, the researcher and data collectors communicated the research objectives to participants clearly and effectively, outlining the study's purpose and scope. They ensured that participants were aware of the procedures for collecting, anonymizing, and securely storing their information. They also provided transparency and accountability by outlining the procedures for gathering data and how the study's conclusions would be applied and disseminated. The participants requested an informed consent form, but they declined to sign it because of political sensitivities and worries about possible consequences. Rather, subjects gave their verbal agreement after being fully informed about the study's goal and their withdrawal rights.

2.7.2 Consent to publish

In addition to their reservations about participating in the study, participants also voiced worries about the consequences of signing or giving written consent since they feared possible consequences if their names were on the document. Therefore, all participants were informed of the research aims, and verbal approval for publication was obtained from them instead of written consent. No published material revealed their names or identities, ensuring their secrecy. Regarding their comments, the researcher promised to keep them private and provided transcripts upon request.

2.8 Woldia's population growth and its implications on spatial growth

Towns in Ethiopia are growing quite quickly these days. Their population is growing as a result of migration as well. Woldia town has one of the fastest population growth rates in the country due to migration. In 1984, there were 1,038 migrants in Woldia town; by 1994, there were 11,325 (Miheretu, 2011). The number of migrants living in the town has surged drastically in recent years. In this regard, Fasigo et al. (2024) noted that the total urban population of the town was 89,707. Of these, 49,887 (55.61%) of the population were migrants. This implies that migration is one of the basic components of the current population growth of the town. This is mostly due to the availability of better social amenities such as the establishment of Woldia University, Woldia College of Teacher Education, Woldia Polytechnic College, the Jeneto–Woldia highway, and the

Woldia–Gondar–Bahir Dar highway. Besides, the town is the center of the industrial zone, and business investments and financial institutions have increasingly attracted and stimulated migrants to the town.

With a total population of 150 from its founding between 1778 and 1785, Woldia has shown consistent growth (Baye et al., 2020). After 243 years since its founding in the last quarter of the 18th century, the town has expanded to be a home of 89,707 people in the year 2020/21.

Central Statistical Authority (CSA) of Ethiopia estimated that the yearly growth rate of the urban population in Woldia was 4.11%, compared to 2.23% for the rural areas. According to the CSA (2007), the town's overall population was 46,126 in the year 2007, and in the year 2020/21, the town's population accounted for 89,707, as the information obtained from Woldia Woreda Health Department. This indicates a high level of population pressure observed between the years 2007 and 2020/21.

The town's population grew at an annual rate of 7.04% between 2007 and 2020/21, indicating that as the population increases, more space will be needed to accommodate the rising number of residents. The surrounding highland and lowland Woredas (administrative units in Ethiopia higher than kebele) of the North Wollo zone, along with the adjacent rural and urban Kebeles (the smallest administrative unit in Ethiopia), contribute significantly to the influx of migrants into the town.

Figure 3 illustrates the migration patterns to Woldia town (concentration zone) from various places of origin, specifically the different woredas. Based on the economic and environmental circumstances that the migrants encountered, the flow can be categorized into three groups according to data from the North Wollo Zone Works and Social Affairs Office. These categories include very high migration-flow Woredas (such as Meket and Wadla), high migration-flow Woredas (including Dawunt, Gubalافت, and Lasta), and Woredas with less migration flow (such as Bugna, Gidan, Habru, and Kobo).

In most cases, as distance increases, the number of migrants declines. This migration pattern is true according to Ravenstein (1885), who suggested that migrants tend to settle in major industrial and commercial hubs and prefer shorter distances due to accessibility and familiarity. The number of migrants decreases with increasing distance.

However, the migration flow map in Figure 3 depicts that a high flow of migrants is located far from Woldia town. This is mainly because agricultural land in those woredas is scarce and seriously affected by drought. In addition, the number of socio-economic opportunities at destination areas attracts more migrants than distance. In line with this, Stouffer (1940) stated that the number of opportunities at the places of origin and destination is strongly related to the size of migration. The place with more opportunities attracts more people and becomes the destination.

On the other hand, a place of limited opportunities becomes the point of origin. Thus, the greater the difference in the opportunities available at these two places, the greater the migration. On the other hand, Figure 3 illustrates that Bugna, Gidan, Habru, and Kobo Woredas, which are located closer to Woldia, have less flow of migrants. This is because those woredas are relatively better in their agricultural land and environmental and economic conditions than the other woredas.

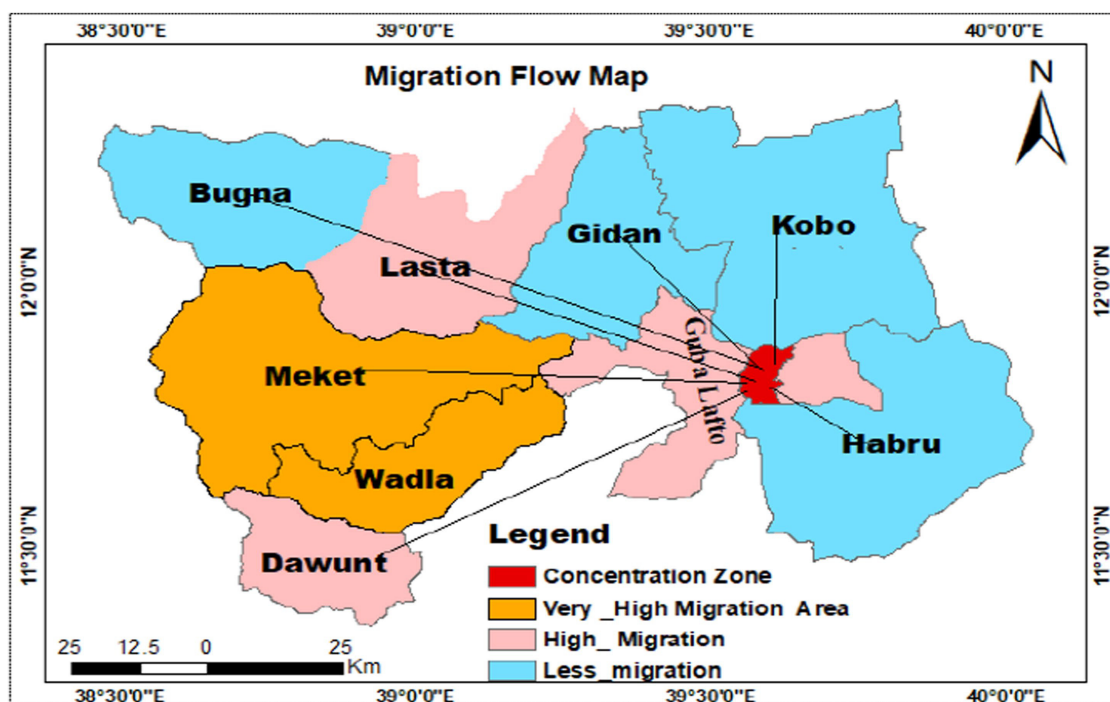


FIGURE 3 Migration flow Map of the surrounding Woredas of Woldia. Source: Developed by Author, 2022.

The population of the town increased with time, going from 8,505 in 1967 to 46,126 in 2007, at an average growth rate of 4.21%, as seen in Table 4. That means the town’s population has expanded more than five times throughout the last 40 years (1967–2007). Additionally, from the year 1970 through the year 2020/21, the town’s yearly growth rate was greater than 3.5%. The years 1992, 2002, 2019, and 2020/21 show the town’s maximum growth rates of 7.2, 7.1, 6.8, and 7.04%, respectively.

Regarding the main drivers of migration, a key informant’s interview of the mayors confirmed that the town has drawn a significant number of migrants from other small-sized towns and rural surrounding areas because of its administrative, economic, and geographic advantages over other urban centers in the zone. As of the 2019 population projection, Woldia was home to over 29.67% of all urban residents in North Wollo, while the zone’s total urban population was estimated to be 282,494. This demonstrates that the town’s population is growing rapidly, necessitating more land to support various socio-economic developments. As a result, there is currently rapid horizontal development in the town brought by strong population pressure, primarily due to migration. The town has grown by engulfing the nearby peripheral areas of Adengure, Ariro, Mechare, Michael, and Teklehaymanot.

TABLE 4 Population size and absolute increase of Woldia town from 1967 to 2020.

Year	Total population size	Absolute increase	Annual average growth rates (%)
1967	8,505	–	–
1970	9,409	904	3.5
1984	15,325	5,916	4.5
1989	18,759	3,434	4.5
1992	22,786	4,027	7.2
1994	24,533	1,747	3.8
1999	31,203	6,670	5.4
2000	32,692	1,489	4.8
2002	37,365	4,673	7.1
2004	40,804	3,439	4.6
2007	46,126	5,322	4.3
2019	83,806	37,680	6.8
2020/21	89,707	5,901	7.04

Source: Computed from CSA annual abstracts (1984–2007) and Woldia Woreda Health Department (2022).

3 Results and discussion

3.1 Push factors as the main drivers of migration

Table 5 depicts the main push drivers of migration. Accordingly, 26.55% of sample respondents responded that poor social facilities

forced people to migrate to Woldia town. From these percentage shares, poor social facilities as primary, secondary, and tertiary push factors account for 8.19, 11.17, and 7.20%, respectively. As a result, poor social facilities such as education and health care are factors that encourage people to migrate to the town. This result is consistent with Kassegn and Endris (2020), who highlighted that poor social infrastructure in rural areas can cause people to migrate to urban areas, with more economic

opportunities and greater access to social services. This is currently true in Woldia town as migrants from adjacent rural and urban kebeles move to Woldia to access better social services they were deprived of back home. The migration flow was prompted by the opening of Woldia University, Woldia Comprehensive Hospital, and many health stations in the town.

In this context, various scholars have recognized several social issues as drivers of migration. In this regard, [Urbański \(2022\)](#) stated that the lack of well-established healthcare systems influences people's aspirations to seek better healthcare elsewhere. Lack of educational opportunity and intolerance of religion are also two additional social causes driving migration.

Social reasons such as a lack of career possibilities, educational chances, and affordable housing frequently drive migrants from locations with low social infrastructure to move to developed areas. According to [Carbajal and Calvo, 2021](#), the social causes driving migration are based on people's desire for a higher standard of living. The urge for better education for oneself and one's family is one social issue that drives migration.

From the total sample of migrants, 23.82% of the respondents replied that poverty is the primary push factor that induced migrants to move to Woldia town. Poverty is frequently regarded as a "push" element that can make someone susceptible to the human population migrating toward better socio-economic areas. This result is consistent with [Dessalegn et al. \(2023\)](#), who highlighted that migration is sometimes viewed as a way to diversify household income when opportunities are scarce or living conditions are poor. Some family members leave the home to move to places with better possibilities, while other family members remain in the home and gain from sources like remittances. Some Ethiopian households in areas prone to drought have also experienced this.

According to the information obtained from the North Wollo Zone Workers and Social Affairs Office and the migration flow map depicted in [Figure 3](#), rural woredas experienced inward migration to the town. This happened because the adjacent rural Woredas are mostly affected by drought and have low agricultural productivity. As a result, rural people in these areas were in a food insecurity situation.

Hence, they prefer to move to the town for employment opportunities and a better life. The spatial distribution of migrants at their place of origin manifests a rural–urban variation and a Woreda variation. They came from different administrative Woredas of the town.

Government policies can play a significant role in creating push factors that drive people to migrate toward urban areas. As stated in [Table 5](#), 16.87% of the respondents responded that government policy can be considered as the driver of the push factor. According to [Angel et al. \(2005\)](#), two policy arguments exist about whether urban growth should be limited, allowed, or welcomed. At one extreme, there have been those who fought to limit urban growth by all means. On the other hand, some welcomed it and actively prepared urban areas to absorb the oncoming waves of new migrants.

Based on those policies discussed so far, the local government of Woldia has applied the welcome policies to redevelop the central part of the town. As a result, people who previously lived at the center were shifted to the periphery areas of the town as intra-migrants, which contributes to the spatial growth of the town horizontally by demanding space.

Lack of land can force people to migrate since it can result in poor living conditions and food shortages. In this regard, different studies conducted in the northern, southern, and northwest parts of Ethiopia revealed that the shortage of land is a cause of the push factor that induced rural people to migrate to urban areas. In line with this, [Zelege et al. \(2008\)](#) and [Asfaw et al. \(2010\)](#) stated that farmland scarcity, landlessness, and a lack of appropriate means of sustenance are among the main causes of rural outmigration, according to studies carried out in various regions of Northern Ethiopia. This circumstance has recently been presented in the rural Woldia woredas that are close by. As we noted in the migration flow diagram in [Figure 3](#) and the survey results shown in [Table 5](#), 10.67% of respondents indicated that shortage of land was thought to be one of the driving forces behind a migrant's decision to move to the town. This is a result of land scarcity affecting the majority of the town's surrounding woredas.

Another study that was carried out in southern Ethiopian districts highlighted the fact that young people in rural areas are being driven away from agriculture by a lack of access to agricultural land ([Bezu](#)

TABLE 5 Response on push factors as drivers of migration.

Push factors	Categories of push factors						Total	%
	Primary		Secondary		Tertiary			
	Frequency	%	Frequency	%	Frequency	%		
Poverty	51	12.66	23	5.71	22	5.46	96	23.82
Land shortage	13	3.23	19	4.71	11	2.73	43	10.67
Poor facilities	33	8.19	45	11.17	29	7.20	107	26.55
Natural disasters	0	0	2	0.50	0	0	2	1.24
Man-made disasters	0	0	0	0	0	0	0	0
Job transfer	27	6.70	6	1.49	2	0.50	35	8.68
Government policy	41	10.17	15	3.7	12	2.98	68	16.87
Bad culture	2	0.50	5	1.24	2	0.50	9	2.23
Rural–urban wage gap	5	1.24	18	4.47	14	3.47	37	9.18
Bad governance	0	0	1	0.25	5	1.24	6	1.49
Total	172	42.68	134	33.25	97	24.07	403**	100%

**The multiple responses of the respondents that exceed the sample size. Source: Field Survey, 2021.

and Holden, 2014). According to research conducted in many rural districts of northwest Ethiopia, landlessness or lack of sufficient land are the main causes of rural out-migration (Tegegne and Penker, 2016).

The rural–urban wage difference is another factor that drives people to move to urban areas. As depicted in Table 5, the survey result indicated that 9.18% of the respondents responded that rural–urban wage differences at the place of origin and destination drove people to migrate to the town. Therefore, income differential at places of origin and destination has been an important push-pull factor regarding wage considerations in terms of higher or expected wages for migrants in the town.

In this study, primary push factors refer to the main driving forces that push people to migrate from their home area to their destination. Secondary push factors refer to the second contributing factors that force people to migrate from their home area to their destination. Tertiary push factors refer to less contributing factors that push people to migrate from their home area to their destination.

3.2 Pull factors as the main drivers of migration

Table 6 depicts that 28.45% (the majority) of the respondents replied that better social facilities in the town were considered primary pull factors. This finding is consistent with Kassegn and Endris (2020), who found that better social amenities like healthcare, education, and public services, as well as the resulting shift in views and values, can be thought of as pull factors that induce individuals to move to a specific geographic area. Moreover, findings from key informants’ interviews with the mayors of the town and North Wollo Zone Workers and Social Affairs Offices also confirmed that one of the primary catalysts for the inward migration of people to the town was the availability of improved social services, which have also contributed to the continuous growth of urban population. Due to their tremendous demands for essential infrastructure services, people migrate, and the town’s rapid horizontal growth has been facilitated by the migration of residents from the nearby rural and urban areas.

The primary “pulling” factors behind the migration of significant populations from rural to urban areas are the relative improvement of various services and better living conditions in urban areas compared to rural areas. As a result of the flow of migration to urban areas, the urban population boomed, increasing the demand for various social amenities in destination areas, such as housing and other infrastructure. As a result, the demand for urban land by the growing population to the periphery also leads to the spatial growth of the town. This is currently the case in Woldia town, as migrants from nearby small-sized rural towns and urban woredas come there hoping to have easier access to social services. The opening of Woldia University, Woldia Teacher Education College, Woldia Comprehensive Hospital, and numerous health stations in the town all contributed to the migrant’s move to the town.

Employment opportunities are a common pull factor that can attract migrants to move to destination areas. Table 6 depicts that 19.30% of the surveyed sample migrants responded that employment opportunities at destination areas drive people to migrate to the town. In line with this, Zoelle (2011) stated that economic variables that attract migrants include indicators like the promise of better jobs, better housing, more income and food, and greater living standards. In addition to bringing back skills and helping to diversify and raise household income, migration helps to meet the labor needs of receiving areas.

Table 6 reveals that 11.15 and 6.49% of sample respondents responded that the town’s improved access to information, business district, and communication hub attracted migrants to settle there. Woldia’s nodal status for commerce, transportation, and communication, as well as the concentration of different industries at the Michael site, attracted the majority of migrants. In line with this, Fu and Gabriel (2012) noted that migrants’ main reasons for relocating to urban areas are the economic advantages of agglomeration economies, such as cost savings and employment opportunities. Furthermore, Tiffen (1995) stated that the benefits of migration include the influx of capital and information and investments in provisions and transportation, which can help make agriculture more profitable. The main motive of human migration has frequently been

TABLE 6 Response on pull factors as drivers of migration.

Pull factors	Categories of pull factors						Total	%
	Primary		Secondary		Tertiary			
	Frequency	%	Frequency	%	Frequency	%		
Good urban environment	29	4.83	14	2.33	21	3.49	64	10.65
Job opportunities	57	9.84	33	5.49	26	4.33	116	19.30
Marriage	7	1.16	7	1.16	30	4.99	44	7.32
Better information	8	1.33	34	5.66	25	4.16	67	11.15
Willingness to change to new places	2	0.33	13	2.16	9	1.50	24	3.99
Presence of relatives & friends	15	2.50	12	1.10	13	2.16	40	6.66
Better social institutions	80	13.31	64	10.65	27	4.49	171	28.45
Good governance	2	0.33	3	0.50	9	1.50	14	2.33
Peace	2	0.33	6	1.00	14	2.33	22	3.66
Center of business and communication	11	1.83	17	2.83	11	1.83	39	6.49
Total	213	35.44	203	33.78	185	30.78	601**	100

**The multiple responses of the respondents that exceed the sample size. Source: Field Survey, 2021.

economic gain. A significant asset that might be transferred to rural areas (home areas or villages) in the form of capital, technology, learning awareness, knowledge, trade, commodities, services, and so on, is the economic benefit attained by migrants from urban areas.

Moving to a destination area with a better climate, stunning scenery, a decreased danger of natural disasters, and a lower risk of flooding may be considered an environmental pull factor. The presence of cultural and recreational resources and neighborly conduct can all be considered aspects of a better environment. The ability to foresee population migrations and make plans depends on understanding pull factors, including a favorable environment. A close look at Table 6 depicted that 10.65% of the sample respondents responded that the good urban environment of the town attracted migrants to settle there. A conducive climate is one of the basic elements of the urban environment that drives people to migrate.

Social pull factors also drive people to migrate. Table 6 shows that 7.32 and 6.66% of the respondents said that marriage and the presence of relatives and friends, respectively, were initiated to migrate. Social attachment, such as having friends, relatives, and family in destination areas, can stimulate migration. In light of this, Wondimagegnhu and Zeleke (2017) asserted that migrants have a piece of earlier information and networks about the destination area before migration. Access to information and systems builds the likelihood of rural out-migration. Migrants often depend on networks once they reach their destination, especially for food, shelter, and advice about customs and language (de Brauw and Carletto, 2012). Strong linkages to the destination community can encourage migration by giving access to job information. Hence, social factors at the place of destination had their own contributing factors for migration.

In this study, primary pull factors refer to the main motivating factors that attract people to migrate from their area of origin to their destination. Secondary pull factors refer to the second motivating factors that attract people to migrate from their area of origin to their destination. Tertiary pull factors refer to fewer contributing factors that attract people to migrate from their home area to their destination.

All in all, the survey results discussed so far are more or less consistent with the empirical study done in Wolaita Sodo town of Ethiopia by Delango (2019), who found that the interaction of push and pull factors at the points of origin and destination encourages migration, at Diredeba Dawa City by Teshome and Belete (2017), who found that the main drivers influencing migration are economic, political, demographic, environmental, and social drivers and Torun et al. (2002) in Guatemala, who also found that the interaction of “Push and Pull” factors at the points of origin and destination encourages migration.

4 The pattern and rate of spatial growth of Woldia 1965–2020

It is crucial to briefly discuss the physical expansion (pattern) and trend (growing rate) of the town after clearly identifying the main drivers of migration and examining demographic trends and their implications for the spatial growth of the town. Since its establishment, Woldia has not undergone extraordinary development and transformation. Since the 1980s, when the town experienced a development phase, the town’s spatial expansion has essentially stalled. Since that time, the urban area of the town of Woldia has not grown spatially and has only slightly expanded due to the dispersal of low-density single-family homes.

Table 7 reveals the urban land area of Woldia in hectares, the amount of rural land that has been taken, the percentage and rate of increase, and the average yearly rate of expansion of the town between 1965 and 2020. The spatial growth rate of the town between the years 1965 and 2007 was 23.58% annually, as depicted in Table 7. The town encroached on 556 hectares (ha) of land in the year 2007, and this is one of the implications of the horizontal spatial growth of the town to the rural periphery by losing the prime rural farmland to urban to provide different urban services for its growing population which is resulted by natural increase and migration.

It is clear that urban ward migration, which is triggered by the interplay of push-pull factors, is inevitable; the influx of people has placed massive demands on urban land. The findings of the interview administered to the municipal manager and urban land administration office of the town indicated that although the high demand for urban land by the growing population of the town, which resulted in migration, the administration was unable to cope with the demand. Thus, the supply lagged behind its corresponding needs. As a result, these massive flows of people are urged by the administration to provide urban space for the construction of housing stock to the periphery, which leads to the spatial growth of the town formally and informally.

In addition to the problems caused by the rapid urban population growth, the road resurfacing (from Piazza to Gonder Ber and from Gonder Ber to Itege Taitu Bitul Primary Full Cycle School via Mugad and Adago) and the town’s growing significance as an administrative hub have also led to the town’s expansion and encroachment into the rural hinterland beyond the existing urban boundaries (Baye, 2009). Table 7 clearly shows the physical growth of the town from the year 1965 to 2020.

As we can see from Table 7, the town’s total area was 51 hectares in 1965 and 142 hectares in 1986, during the previous 21 years. Between 1965 and 1986, infill growth predominated. With 178 and 188%, respectively, the percentage change rate for the years 1986 and 2018 was exceptionally high. A total of 211 hectares of agricultural hinterland were encroached upon by urban uses at a rate of 16.23 hectares per year between 1994 and 2007. Between 1992 and 2007, the sites of Adengure, Ariro Mecharie, Michael, and Teklehaymanot, among others, were included within the town’s built-up area. This suggests that the town is growing horizontally at an alarming rate within a very short period.

Within 55 years, this outward growth and the subsequent invasion of rural land (both built-up and open spaces that would soon be built

TABLE 7 Urban area of Woldia in hectares from the Year 1965 to 2020.

Year	Urban area in hectares	Absolute increase	Rate of change in percent
1965	51	–	–
1986	142	91	178
1992	343	201	141
1994	355	12	3.5
2007	566	211	59.4
2009	694	138	25
2018	2001	1,307	188
2019	2,103	102	5.1
2020	2,213	110	5.2

Source: Aerial photo (1965 and 1986), CSA (1994), and the municipality of the town (2022).

up) absorbed 2,162 hectares of the surrounding territories, including agricultural fields. This means that between 1965 and 2020, the urban growth rate was 77.1% per year. Wherever there has been spatial growth, there are negative effects on the periphery in a variety of ways, particularly concerning farmer eviction from their farms (loss of farmland), deforestation and ecosystem loss, water and air pollution, environmental or land degradation, waste generation, conflicts, and higher costs for infrastructure and services.

This is because urban areas expand spatially to the periphery to accommodate more people as the population of any particular country grows, either through migration or the pace of natural increase. Instead of vertical growth, which optimizes the availability of land, horizontal growth is mostly achieved by absorbing the rural hinterland, primarily agricultural property near the town, and turning grazing land into urban uses. The town's vertical growth has been extremely limited because it is so expensive and beyond the reach of the majority of town residents to build high villas and stairs.

As one of Ethiopia's fastest-growing urban areas, Woldia town first developed linearly following the main roads (see the town's shape in Figure 4 until 1992). Even though the town's spatial growth is not uniformly large in all directions, at present, the town is growing primarily in the directions of the hillside of north, south, west, and southwest. However, the northern and northeastern parts of the geographical growth of the towns are limited by the physical obstacles of Mount Gabriel and Gubarja/Kore, respectively.

The town's growth in the northwest and south-west, which is primarily residential in nature, has resulted in the loss of prime agricultural lands in Adengure, Ariro, Mechare, Michael, and Teklehaymanot, some of the areas included by the town between 1992 and 2020. The westward expansion of the town along the Woldia-Gondar-Bahir Dar highway is mainly left for industrial purposes. Currently, the town has experienced not only remarkable spatial growth but also population pressure over the course of its history. The expansion of the adjacent built-up area follows the highways and into

the surrounding rural areas connected by three radial roads with other towns in the country.

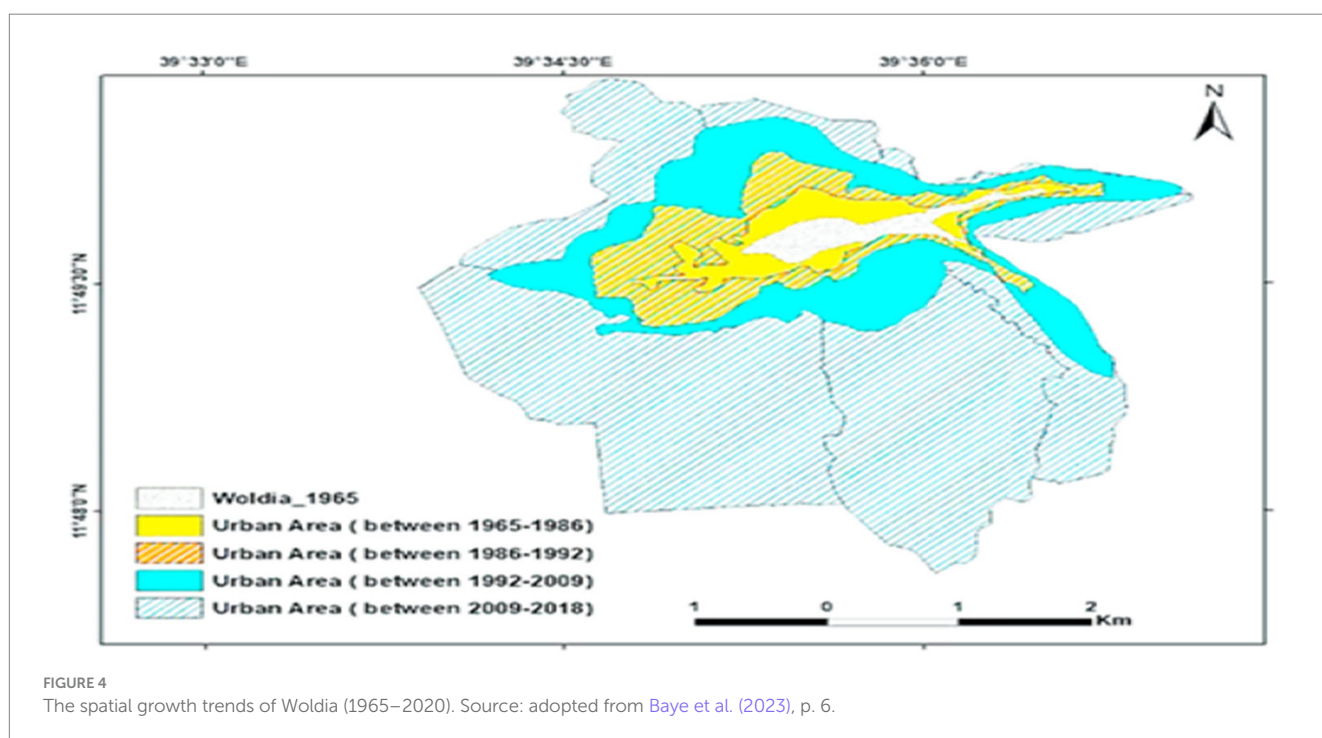
As we can see in Figure 4, Woldia's current and future urban growth will follow three main routes: the first is oriented toward the northwest and leads to Adengure, passing through parts of the Ariro region; the second is oriented toward the west and follows the ups and downs of the Woldia-Woreta road; and the third is oriented toward the south, southeast, and southwest.

Infrastructure services are also enhancing the town's spatial growth due to the population's increasing size and demand for various services, including residential, commercial, industrial, recreational, and institutional ones. This suggests that as the town's population grows and the demand for functional complexity rises, more and more space will be required to meet both the needs of residents and the town's excess population. As a result of encroaching on the rural agricultural areas, the urban area of the town is increased to the neighboring hinterlands. The town's urban growth is mostly a recent phenomenon that has been widely seen starting from the final part of the 20th century, as shown by the geographic growth map of the town.

5 Conclusion and recommendations

Urbanization is a defining phenomenon of the 21st century, characterized by a steadily increasing global urban population. At the heart of this transformation lies rural-to-urban migration, which is a powerful driver of demographic shifts and spatial expansion. This phenomenon is most pronounced in developing nations, where migration reshapes the urban landscape, redefines socio-economic dynamics, and influences growth patterns. The town of Woldia, Ethiopia, provides a compelling case study of how migration drives these changes.

This study delves into the complex relationship between migration and urban expansion in Woldia, highlighting how rural-urban migration, natural population growth, and land reclassification collectively accelerate urbanization. The findings reveal that these



factors have spurred significant horizontal expansion, with urban development encroaching on nearby rural lands. This encroachment has created a ripple effect, intensifying competition for resources, straining existing infrastructure, and posing challenges for sustainable development.

The study identifies a range of factors driving this migration. Push factors—such as poverty, inadequate rural facilities, and land shortages—motivate individuals to leave rural areas. Conversely, pull factors—such as improved employment prospects, access to superior social amenities, and the attraction of enhanced urban environments—draw individuals toward urban centers. Notably, access to better social facilities (28.45%) and job opportunities (19.30%) emerge as the most significant pull factors. These dynamics underline the need for targeted interventions to manage growth effectively and promote balanced development.

To address these challenges, the study underscores the critical importance of integrated strategies that bridge urban and rural disparities. Policymakers and urban planners must focus on fostering rural development through improved infrastructure and services while implementing sustainable urban management practices. Investments in peri-urban areas are essential to accommodate growth while preserving valuable rural lands. These measures are crucial not only for mitigating the immediate pressures of urbanization but also for ensuring long-term socio-economic and environmental sustainability.

The insights gleaned from this study have broader implications for African and global contexts, offering valuable lessons for regions grappling with similar challenges. Effective migration management requires a nuanced understanding of the interplay between migration drivers and urban growth dynamics. Strategic planning informed by robust data and cross-sector collaboration can help to balance development and sustainably manage urban expansion.

In conclusion, rural-to-urban migration plays a pivotal role in driving urban population growth and spatial expansion, with profound implications for resource management, infrastructure, and socio-economic stability. The encroachment of rural lands by urban areas, as seen in Woldia, reflects the urgent need for coordinated strategies to address the pressures of rapid urbanization. Future research should build on these findings, exploring gaps in knowledge and refining policy recommendations to guide sustainable urban development. As urban centers across the globe continue to grow, a proactive, evidence-based approach will be critical to ensuring that urbanization contributes positively to economic growth, social equity, and environmental resilience.

5.1 Recommendations

Recently, the impact of migration on the spatial growth of urban centers has rapidly increased due to various factors, and this has become a significant issue for scholars, policymakers, governments, and non-governmental organizations in Ethiopia in general and the study area in particular. Hence, considering the study's findings, the following suggestions are made.

Therefore, the study suggests that (1) town administrators and urban policymakers should have better knowledge of how to manage migrants at the place of destination to adequately respond to the spatial growth of the town with its growing population. (2) Policymakers should implement sound rural development strategies (providing rural job opportunities and basic social amenities) and efficient urban management to close the development gap between urban and rural communities. (3) The existing

spatial growth of the town has an impact on the loss of agricultural land at the periphery. To this end, municipal planners and urban policymakers should employ vertical expansion of urbanization, which minimizes the loss of prime agricultural rural land at the periphery. (4) Instead of encroaching on the rural periphery to expand the various socio-economic developments, the local and regional government should implement an infill policy on open floor spaces located at the center of the town. (5) Migration and horizontal spatial growth are inevitable phenomena in Woldia town. As a result, the population and physical areas of the town will grow. Therefore, to successfully support migrants, local, regional, and national governments, planners, and policymakers need to be clear-eyed about the dynamics of the growth that is taking place. In addition, proper urban expansion planning should be used to create productive, orderly, and inclusive towns in the context of rapid urban population growth by creating space for new urban residents at the right scale in areas where migrants are likely to settle.

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

Prior to commencing data collection, the researcher has secured full ethical clearance from the Postgraduate Directorate Office of EiABC (Ethiopian Institute of Architecture, Building Construction, and City Development) under reference number EiABC/GPD/156./2019. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

MF: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Software, Validation, Writing – original draft, Writing – review & editing. BA: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Supervision, Validation, Visualization, Software, Writing – review & editing. MW: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Supervision, Validation, Visualization, Writing – review & editing, Software.

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ANNEX 2: SUBMITTED MANUSCRIPT

2.1 Remittance and Urban Expansion: Exploring the role of remittance in shaping horizontal spatial growth in Woldia Township, Ethiopia, Submitted to Frontiers in Human Dynamics (FRONTIERS MEDIA S.A) by Mulu Fasigo Fente, Birhanu Girma Abebe (Dr.) & Mintesnot Gebeyehu Woldeamanuel (Professor).

ANNEX3: QUESTIONNAIRES FOR MIGRANT SAMPLE RESPONDENTS'

Title: The Role of Migration Dynamics in shaping Horizontal Spatial growth: The Case of Woldia Town and its Hinterlands North Wollo Zone, Amhara Region, Ethiopia

Objective of the Questionnaire

This questionnaire is prepared by Mulu Fasigo Fente. The purpose of the questionnaire is to gather information about the *role of Migration Dynamics in shaping Horizontal Spatial growth* in Woldia town for the Partial fulfillment of Doctorate Degree in Urban and Regional Planning at Ethiopian Institute of Architecture, Building Construction and City Development (EiABC).

The researcher communicated the study's objectives and anticipated results to the participants before distributing the questionnaire. Before responding, the participants were free to ask any questions they had and get any clarifications they needed on the questionnaire. This helps to reduce the likelihood of inaccurate responses by providing participants with a thorough grasp of the study's objectives.

Confidentiality

Information obtained from the respondents was employed only for academic purpose and the confidentiality was kept greatly by the researcher. Participation is voluntary and respondents have the right to withdraw at any time, without giving reasons. Any information obtained can be returned and not used for the study if the participant so wishes.

Part One : Demographic and socio-economic Characteristics of Migrants at Present(After Migration)

1. Sex: - A. Male B. Female
2. Age
A) 15-24 B) 25-34 C) 35-44 D) 45-54 E) 55-64 F) >65
3. Marital Status:-
A. Single D. Widowed
B. Married E. Widower
C. Divorced F. Separated
4. Religion: - A. Orthodox Christian B. Protestant C. Muslim D. Catholic E. Other
(specify)_____
5. Educational attainment (highest level of schooling completed)
A. Illiterate
B. Read and write (Religious & Adult Education)
C. Primary school (1-6)
D. Junior (7-8)
E. Secondary (9-10)
F. Preparatory (11-12)
G. College Diploma (Vocational and Certificate)
H. Bachelor
I. Msc/MA
J. PhD
6. Your employment Status
A. Employed
B. Trainer/Student
C. Pension
D. Unable to work because of physical & Health problem
E. Others (Specify)-----
7. If you are “**employed**”, what is the nature of your Work?
A. Self-employed
B. Private
C. unemployed
D. Government

E. Others (Specify)_____

8. What is the nature of your present work?

- A. permanent
- B. temporary
- C. seasonal
- D. Other

9. What is the average monthly income of Head of the household?

- A) < 1,624
- B) 1,624-3,333
- C) 3,334-6,193
- D) 6,194-10,150
- E) 10,151-13,926
- F) >13,926

Part Two: - Demographic and socio-economic Characteristics of Migrants –Past (Before Migration)

3. What was your age when you left your place of birth?

- A <15
- B.15-24.
- C. 25-34
- D. 35-44
- E. 45-54
- F. 55-64
- G. > 65

4. Educational attainment (highest level of schooling completed) before you left your place of origin?

- A. Illiterate
- B. Read and write (Religious & Adult Education)
- C. Primary school (1-6)
- D. Junior (7-8)
- E. Secondary (9-10)
- F. Preparatory (11-12)
- G. College Diploma (Vocational and Certificate)
- H. Bachelor
- I. Msc/MA
- J. PhD

5. What was your marital status when you left your birth place?

- A. Single
- B. Married
- C. Divorced
- D. Widowed
- E. Widower
- F. Separated

Part Three: - Place of Birth, Distance, and Patterns of Migration

1. Your birth place is: A. Rural B. Urban
2. The distance between Woldia and your place of origin in Kilometer is
 - A. <30 D.51-60
 - B. 30-40 E.61-70
 - C. 41-50 F. >70
3. What was your pattern/direction/ of migration?
 - A. Intra Migration B. Urban to Urban Migration C. Rural to Urban migration

Part Four: - Drivers of Migration

1. What were the reasons for you to migrate? (please indicate **primary** if the reason is the main factor for your migration, **secondary** if the second most and **tertiary** if it is less)

No	Reasons	Primary	Secondary	Tertiary
1.1	Push Factors			
1.1.1	Poverty			
1.1.2	Existence of land shortage			
1.1.3	poor living facilities			
1.1.4	Existence of natural disasters (drought, floods)			
1.1.5	Man-made disasters (war, war)			
1.1.6	Due to job transfer			
1.1.7	Influence of investment (government policy)			
1.1.8	To be free from bad culture			
1.1.9	Rural-urban wage gap			
1.1.10	Existence of Bad governance			
1.2	Pull Factors			
1.2.1	good urban environment			
1.2.2	Job opportunities in the town			
1.2.3	Marriage			
1.2.4	Better information about the town			
1.2.5	Willingness to change and see new places			

1.2.6	Presence of relatives and friends			
1.2.7	Better social institutions (education, health services, etc.)			
1.2.8	Existence of good governance			
1.2.9	Better Peace in the town			
1.2.10	The town is center of business and communication			

2. How population growth (migration) in Woldia can be the drivers of spatial growth?

3. What other factors contributing for the spatial growth and development of Woldia besides migration?

Part Five: Effects of Migration at Place of Origin and Destination

1. Do you think that leaving your place of origin has a positive impact?

A. Yes

B. No

2. If your answer to question 1 is **yes**, which of the following do you think has a positive effect?

(More than one can be selected)

A. Increases Remittance

B. Reduce unemployment

C. Increases local Economy

D. Reduce the depletion of natural resources

E. Reduce stress on service delivery

3. If your answer to question 1 is **No**, which of the following do you think has a negative effects? **(More than one can be selected)**

A. Reduces labour forces

B. Agricultural production decline

C. It creates sex imbalance

D. Depopulation is happened

E. Separate from family

9. Before you migrated to Woldia, did you have any information about the following social services?

Living Condition & Facilities	Yes	No
Housing Condition		
Health Facilities		
Job Opportunity		
Education		
Transport		
Others (Specify)		

Part Six: Migration, Remittance and Spatial growth related Questions

1. Do you have a migrant family members or relatives living abroad?
 - A. Yes
 - B. No
2. If your answer for question No. 1 is **yes**, which region is migrant destination?
 - A. Africa
 - B. Europe
 - C. Middle East and the Gulf Region
 - D. North America
3. What were the major reasons for their migration?
 - A. Support family financially
 - B. Pressure from friends and family
 - C. Get better life
 - D. Pressure from agencies and brokers
4. How did you get the source of financing costs to migrate?
 - A. Personal saving of migrants
 - B. Household saving
 - C. Sale of asset
 - D. Loan from relatives
5. What were the means of migration?
 - A. Legally via agencies
 - B. Illegally crossing borders
 - C. In the pretext of visit

6. Do you receive remittance money from your family member living abroad?
 - A. Yes
 - B. No
7. What the motives were behind to remit money back to home?
 - A. Pure Altruism
 - B. Self- interest
 - C. Household composition
 - D. Economic status of migrants and household
 - E. Culture and social norms
 - F. Access to Financial services
8. What were the main channels to remit money?
 - A. Bank
 - B. Western Union
 - C. Friend and relative
 - D. Bank and friend
9. What were the major challenges of migrant household members to use formal channels?
 - A. Weak financial institutions
 - B. High costs of formal channels
 - C. Accessibility and flexibility
 - D. Culture and social ties
10. If yes for question No. 6, what was the total amount of money you received in the past 12 months in Ethiopian birr?
 - A. < 10,000
 - B. 10,001-20,000
 - C. 20,001-30,000
 - D. 30,001-40,000
 - E. >40,000
11. For what purpose the remittance money is used for
 - A. Saving and productive investment
 - B. Household consumption
 - C. New housing development
 - D. Renovate existing houses
12. How often migrants send remittances money for their family?
 - A. Regularly
 - B. When needed
 - C. Once in a year

D. Twice in a year

13. Which negative effects of remittance driven growth is common in Woldia?

A. It increases squatter settlement to grow to peri-urban areas

B. It enhances migrant household members to demand of urban land

C. It drives the changes of urban land use in the town

Part Seven: Migration, Spatial growth and LULCC related Questions

1. Do you think that migration drive LULCC in the town?

A. Yes B. No

2. If you answer for question No.1 is “Yes” What are the main drivers of LLUCC in the town?

A. Population growth driven by migration

B. Infrastructure development

C. Environmental degradation

D. Government policies and land tenure systems

3. In what way horizontal spatial growth affects LULCC?

A. Agricultural land conversion

B. Deforestation and habitat fragmentation

C. Loss of biodiversity and ecosystem degradation

D. Wetland encroachment and Water Scarcity

4. How did you rate the effects of spatial growth on LULCC in Woldia?

A. Very high B. High C. Medium D. Low

5. What intervention measures have been taken by the local government bodies to reduce the effects of spatial growth on LULCC?

ANNEX 4: CHECKLISTS FOR INTERVIEW

Interview with Mayors, labour and social affair office, and Kebele managers of the town

1. Can you please introduce yourself, your position, and years of working at your current office, in particular your present position?
2. Do you think that migrants are the reason for rapid growth of the population of the town?
3. Do you think the migration has a positive contribution to the growth of the town? How?
4. How did you rate the impacts of migration in the town?
A) Very high B) High C) Medium D) Low E) Very low
5. Would you mention please some of the positive and negative consequences of migration at place of origin and destination?
6. Numerous migrants moving into the town from the surrounding districts. Who is responsible of lowering their trajectory toward the town?
7. Do you think that Woldia town is capable of absorbing all migrants to provide housing and jobs opportunity?
8. Can you tell me anything concerning the effect of migration that we did not see in this discussion?
9. What are the challenges /difficulties resulted from migrants in the town?
10. What effects do you observe in the social, economic and environmental aspect of the town over years?
11. About any of the subjects we have covered or associated matters you think I should know about, is there anything else you would want to add?

Thank you for your cooperation and time.

Interview with Mayors, Municipal Urban land development and management, and Cadastral Office of the town

1. Can you please introduce yourself, your position, and years of working at your current office, in particular your present position?
2. What are your duties and responsibilities in this office?
3. What land use related data is collected by the cadastral/surveyor?
4. How the cadastral activities are used in the urban planning of the town?
5. Who is involved in the urban cadaster of the town?
6. Recently, the periphery areas of the town (such as the prime agricultural land) are occupied by migrant people and construction of houses illegally which is contrary to the urban planning of the town? What is your comment?
7. How did you evaluate the performance of your activities in controlling the widespread informal settlements in the environmentally sensitive and forest reserved areas in the town?
8. Would you explain the major drivers of LULCC in the peri-urban area of the town?
9. Would you mention the main effects of spatial growth on LULCC?
10. Who is responsible for the spatial growth Woldia to the hinterlands? How do you evaluate its growth from the planning point of view?
11. Because of the spatial growth of Woldia, prime agricultural lands are converted and farmers are displaced. What is your view on this regard and what planning strategies you will suggest to accommodate the growing population?
12. How did you see the spatial growth of Woldia and its future impacts on the surrounding rural farm land?
13. Who is participated in urban planning?
14. Poor urban planning contributes to the horizontal growth of the town. What is your comment on this issue?
15. What strategies your office will use to mitigate the horizontal development in the periphery areas of Woldia?
16. About any of the subjects we have covered or associated matters you think I should know about, is there anything else you would want to add?

Thank you for your cooperation and time.

Interview with illegal construction control and peacekeeping officials (kebele and municipality)

1. Can you please introduce yourself- position and years of working at your current office, in particular your present position?
1. What are the major duties and responsibilities of the core processor owner?
2. In your opinion and experience, what are the main drivers of LULCC in the town?
3. What are the impacts of spatial growth of Woldia on LULCC?
4. Do you think that the flow of remittances enhances the growth of squatter settlement?"
5. Is there a legal ground which prevents the construction of squatter settlement at the periphery? If so, would you Why suggest how it operates?
6. What action should be taken for those who built illegal houses at the periphery of Tinifaz sites those who received remittances from their migrant household members?
11. About any of the subjects we have covered or associated matters you think I should know about, is there anything else you would want to add?

Thank you for your cooperation and time.

Interview with Bank Mangers

1. Can you please introduce yourself- position and years of working at your current office, in particular your present position?
2. Is there inflow of remittance in your instruction and from which areas those remit came from most?
3. Would you explain the amount of money remit by migrant from the year 2016 to 2020
4. Do you think that migrant living abroad regularly uses formal channels? If so, what are the main factors hindered them to use?
5. Do you think that remittance has a positive growth impact on Woldia? If so, would mention some of them?
6. Do you think that remittance has a negative growth impact on Woldia? If so, would mention some of them?
7. Most migrant household families said that high cost of charging of the formal channels retard the migrant to send and they prefer other means. How do you see this?
8. About any of the subjects we have covered or associated matters you think I should know about, is there anything else you would want to add?

Thank you for your cooperation and time.

ANNEX 5: CHECK LIST FOR FOCUS GROUP DISCUSSION (FGDS)

FGDs with elderlies' living in the town

1. For how many years have you been living in this locality/area?
2. Who found Woldia and for what purpose?
3. How do you the growth of Woldia comparing the present development with the past??
4. To what extent migration contributes for the population growth of the town?
5. How do you the population growth of the town comparing the present with the past?
6. What are the contributing factors for the growth of Woldia besides migration?
7. What are the main effects of migration at place of destination?
8. Many people forward that migration has an impact at place of origin and destination areas. So, what is your view on this?
9. What are the challenges resulted from migrants in the town?
10. Large numbers of migrants are inward to the town from nearby areas. Who is responsible to reduce their flow towards the town?
11. Is there anything else you want to add concerning any of the topics we have discussed or related issues of which you think I should be aware?

Thank you for your cooperation and time

ANNEX 6: FIELD OBSERVATION CHECKLIST FOR SPATIAL GROWTH

1. Physical and Land-Use pattern

- Land cover changes: conversion of natural areas (forests, wetlands) to built-up zones and agricultural land turned into residential/commercial/industrial use.
- Building patterns (building constructed by remitted money)
- New developments (Housing development to the periphery and Infrastructure projects such as roads)
- Vacant/underutilized land (abandoned lots or incomplete barren land)

2. Infrastructure and Connectivity

- Transportation networks (road resurfacing, proximity to highways or major transit corridors).

3. Environmental Indicators

- Habitat disruption (deforestation, wetland encroachment)
- Pollution and degradation (environmental degradation and ecosystem).

4. Socio-Economic Factors

- Demographic shifts (new migrant settlements or informal housing, displacement of existing communities).
- Economic activity (decline of farming lands).

5. Spatial Growth Patterns

- Expansion direction (Radial (along transport corridors) vs. scattered ("leapfrog" development).
- Urban-rural fringe (Transition zones between urban and rural areas).

6. Tools and Documentation

- Equipment (GPS device for coordinates, camera/phone for photos/videos, Maps, satellite imagery, or GIS layers for reference).

ANNEX 7: GPS POINTS

LU/LC	X	Y	LU/LC	X	Y
Agriculture	561780	1304370	Bare land	567840	1301310
Agriculture	563880	1302615	Bare land	561735	1309980
Agriculture	561150	1305765	Bare land	560280	1305510
Agriculture	561975	1309005	Bare land	560400	1306635
Agriculture	564105	1311885	Bare land	566385	1300890
Agriculture	563160	1304775	Bare land	567660	1301385
Agriculture	560250	1303065	Bare land	562065	1310640
Agriculture	564405	1312725	Bare land	567075	1301310
Agriculture	564165	1312395	Bare land	561660	1309620
Agriculture	564660	1306095	Bare land	562230	1311030
Agriculture	567285	1301895	Bare land	562005	1310340
Agriculture	561600	1306260	Bare land	566655	1301040
Agriculture	566955	1312035	Bare land	561990	1310520
Agriculture	562965	1309890	Bare land	561945	1310250
Agriculture	562275	1309320	Bare land	561495	1309005
Agriculture	564450	1305165	Bare land	561090	1308450
Agriculture	564780	1312290	Bare land	562155	1310625
Agriculture	564165	1305060	Bare land	561645	1309560
Agriculture	563700	1309560	Bare land	566520	1300965
Agriculture	563940	1309230	Bare land	560460	1305030
Agriculture	564360	1312620	Bare land	561840	1310070
Agriculture	560535	1306200	Bare land	561900	1310400
Agriculture	565500	1312215	Bare land	562125	1310910
Agriculture	568470	1309320	Bare land	566520	1301055
Agriculture	564150	1302045	Bare land	561990	1310640
Agriculture	561390	1304400	Bare land	561600	1306785
Agriculture	562680	1311570	Bare land	561495	1309440
Agriculture	560745	1305345	Bare land	562245	1311135
Agriculture	563445	1301835	Bare land	560385	1305135
Agriculture	62155	1307775	Bare land	561555	1309485

Built-up area	565740	1301310	Forest land	562770	1310505
Built-up area	564735	1309635	Forest land	567465	1308165
Built-up area	564270	1308480	Forest land	562455	1310850
Built-up area	564690	1302675	Forest land	563715	1308135
Built-up area	565680	1305660	Forest land	566730	1305390
Built-up area	563745	1307820	Forest land	566475	1306560
Built-up area	563190	1305705	Forest land	567900	1311705
Built-up area	563685	1306530	Forest land	568605	1311870
Built-up area	563625	1309485	Forest land	566295	1308870
Built-up area	565110	1307175	Forest land	566295	1308840
Built-up area	565365	1303380	Forest land	563865	1311300
Built-up area	561495	1308015	Forest land	564990	1303215
Built-up area	560730	1304655	Forest land	561345	1306695
Built-up area	566025	1308765	Forest land	568800	1311855
Built-up area	563280	1307145	Forest land	568380	1311510
Built-up area	565395	1304100	Forest land	569655	1311000
Built-up area	567030	1310445	Forest land	569145	1310955
Built-up area	562845	1302780	Forest land	561540	1305900
Built-up area	565365	1307250	Forest land	560490	1303410
Built-up area	561960	1307940	Forest land	561360	1303320
Built-up area	564480	1304505	Forest land	564960	1305765
Built-up area	564735	1308645	Forest land	567330	1308720
Built-up area	566520	1305435	Forest land	567645	1309935
Built-up area	563010	1306080	Forest land	563760	1311210
Built-up area	564300	1306455	Forest land	567630	1301175

Built-up area	565890	1309530	Forest land	564060	1303935
Built-up area	566625	1304730	Forest land	568470	1311210
Built-up area	560550	1305915	Forest land	562890	1303260
Built-up area	567315	1301415	Forest land	566220	1311090
Built-up area	564555	1309215	Forest land	565830	1306725