



**ADDIS ABABA UNIVERSITY**

**COLLEGE OF SOCIAL SCIENCES**

**DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL STUDIES**

**FACTORS AFFECTING FOREST DEGRADATION IN RURAL HOUSE HOLDS:THE  
CASE OF TOLE WOREDA, IN SOUTH WEST SHEWA ZONE.**

**BY**

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**NOVEMBER, 2024**

**ADDIS ABABA, ETHIOPIA**

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**THIS RESEARCH SUBMITTED TO THE DEPARTMENT OF GEOGRAPHY AND  
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This is certifying research prepared by Dejene Denboba entitled “Factors affecting forest degradation in rural households”: The case of Tole woreda, South West Shewa Zone, Submitted in fulfilling the research requirement for the Degree of Master of Art in Geography and Environmental studies.

Approval sheet

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## **Declaration**

My signature below, I declare this Research is my own original work. I have followed all ethical and technical principles of scholarship in the preparation, data collection, data analysis and completion of this research. Any scholarly matter that is included in the research has been given recognition through citation. This Research is submitted in partial fulfillment of the requirements for M.A Degree in Geography and Environmental Studies at Addis Ababa University.

I seriously declare that this Research has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate. .

Name: Dejene Denboba

Signature: \_\_\_\_\_

Date: November, 2023/2024

**Dedication**

This research is dedicated to my wife Atalu Kebede and my families and staff members of Department of Geography and Environmental Studies- for helping me with affection and love and for their partnership in the success of my education.

## **Acknowledgement**

Above all things, I would like to thank my almighty God who has helped me in all directions to the success of my academic and who is the source of my strength in every single day of my life.

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## **List of Acronyms**

FDRE Federal Democratic Republic of Ethiopia

FGD Focusing Group Discussion

FOA Food and Agriculture Organization

KM kilometer

masl meter above sea level

SCA Central Statics Authority

SFM Sustainable Forest Management

SHS Sample Households

THHS Total Households

UNC United Nation Conference

## **Abstract**

*Forest degradation is the process of removing forest area and using the land for other purposes. Increasing demand for expansion farmland, firewood collection, and charcoal production has accelerated the rate of forest degradation in the study area. Forest degradation has negative effects on the environment including, land degradation and soil erosion, loss of biodiversity, climate change and agriculture productivity. This study is aimed to assess forest degradation status and the factors affecting forest degradation in rural households in Tole woreda, south west Shewa, zone, Oromia region. The main objective of this study is to assess the factors affecting forest degradation in rural households. A cross sectional study design has been employed. The source of population was found in rural households in Tole woreda. The sample size of this study was 174 households' from 1200 total households of selected kebele. Data were collected by using open and close ended questionnaires for gathering important information used for this study. Both qualitative and quantitative data were collected from primary and secondary data sources. At frequency of 49, the age group of 25–34 years old accounts 28% of the respondents from the study area indicated that, the existence of unwise use of forest resources that led to forest degradation in the study area. The result indicated that the most respondents about 92 (52.9%) reported that firewood collection was the main factor that resulted in forest degradation. Whereas About 49 (28.2%) of respondents reported that charcoal production was the second factor that resulted in forest degradation, and about 30 (18.9%) of respondents reported that farmland expansion was the third factor that resulted in forest degradation in the study area. Based on the present study, it is recommended to promote trees planting (reforestation, afforestation and agroforestry) with emphasis on multipurpose and highly adaptable trees and appropriate to undertake the sustainable forest management practices.*

**Key words:** forest degradation, households, wood collection, charcoal production.

# 1. INTRODUCTION

## 1.1. Background of the Study

.Forest degradation is a global environmental issue, but its definition is problematic. Difficulties include choosing appropriate reference states, timescales, thresholds, and forest values. We dispense with many such ambiguities by interpreting forest degradation through the frame of ecological resilience, and with reference to forest dynamics. Specifically, we define forest degradation as a state of anthropogenic ally induced arrested succession, where ecological processes that underlie forest dynamics are diminished or severely constrained. It is hard to think that there was a time when 90% of the earth was covered by trees, even though people are becoming more and more aware of the serious effects forest degradation is having on the earth, the number of forests being destroyed is still very high (Spracklen, 2012).

The causes of forest degradation are varied but regarding to human factors increased demand for wood fuel collection, clearing of forests for agriculture and population growth are the primary known causes for the loss of forests and woodlands (FAO, 2002). For instance, arguably increasing population is the biggest challenge of all to achieve sustainable management of human life support systems and controlling population growth is perhaps the best single thing that can be done to promote sustainability (Colchester and Lohmann, 1993). Shifting agriculture also called slash and burn agriculture is the clearing of forested land for raising or growing the crops until the soil is exhausted of nutrients and the site is overtaken by weeds and then moving on to clear more forest. Smallholder production in forest degradation and the growing number of such producers notably shifting cultivators were the main cause of forest degradation. Firewood collection can have a number of negative on forests, including: loss of natural habitats, reduce of soil fertility, climate change, negative impact on tree species, especially old growth forest species. The process of charcoal production involves felling trees and burning them for as long as there has been a need for them. Some of the uses for charcoal are cooking, heating, making electricity, and sealing to sell for profit. Human and forest health are impacted by the extremely hazardous and difficult preparation process involved in producing charcoal (Vilela, A. and Lora, E. 2014).

The effects of the devastation may include decreased environmental quality, extinction of animal species, and insecurity of food. Once more, the food and health of the locals who rely on forest products are directly impacted by the decline in biodiversity (Per and Rajul, 1995).

. Soil degradation is thus the most immediate environmental problem facing Ethiopia. The loss of soil, and the deterioration in fertility, moisture storage capacity, and structure of the remaining soils, all reduce the country's agricultural productivity. Soil erosion is greatest on cultivated land, where the average annual loss is 42 tons/ha, compared with 5 tons/ha from pastures. As a result, almost half of the loss of soil comes from land under cultivation, even though these lands cover only 13% of the country. Not surprisingly the highest average rates of soil loss are from formerly cultivated lands, which are currently unproductive because of degradation and have very little vegetative cover to protect them (Hurni, 1990). One of the effects of forest degradation is that the carbon originally held in forests is released to the atmosphere either immediately if the trees are burned, or more slowly as unburned organic matter decays. Cultivation also oxidizes 25-30% of the organic matter in the upper meter of soil and releases that to the atmosphere. Reforestation reverses these fluxes of carbon. While forests are growing, they withdraw carbon from the atmosphere and accumulate it again in trees and soil. The emissions of carbon from tropical forest degradation are determined by two factors: rates of land-use change (including harvest of wood and other forms of management) and per hectare changes in carbon stocks following forest degradation (Betts, 2004).

The approach to forest management involves involving the local communities in the decision-making process by raising awareness about forest conservation and utilization. All parties are involved in sustainable forest management practices and the implementation of strategies and techniques at the regional government through local communities by Van Dam (2001).

## 1.2. Statement of the Problem

In Ethiopia forest degradation rate is very high it estimated that about 40% of the country was forested at the turn of the century. About 2%, the forest reserves are estimated to be under 3% and about 100, 000 hectares of forests are lost annually. About 1 billion tons of top soil are also believed to be eroded from Ethiopia (Tadesse, 2001). Forest degradation is serious problem of land degradation and soil erosion in the country. The most common form of land degradation in Ethiopia is soil erosion which is exacerbated by over grazing, cultivation on steep slopes and unsustainable farming practices (Anon, 2010).

Forest degradation is also serious environmental problem including climate change, loss-biodiversity and agriculture productivity. Therefore, local communities are the primary stewards of forest resources. These resources are usually characterized by the local communities, culture and management systems, where cultures are materially and spiritually built upon the physical world of the forests. Local communities' proper access to forest resources around them and respect to their indigenous institutions and strategy management of these resources provides the opportunity for safeguarding forest resources sustainable (ragessa, 2001).

Firewood collection, charcoal production and expansion of farmland are the major causes of forest degradation in the study area. Knowing the factors affecting forest degradation is very important to protect and conserve forest resources in the study area.

Forests degradation is the serious problems in the study area, as observed during the site assessment and observation communities who live near side of forests area continued destruction the natural forests without management and protection. Rural households within the study area to move long distances to chop down the first available tree to obtain wood for fuel and construction values.

Even though some researchers have been conducted in Ethiopia regarding factors affecting forest degradation, there is no documented information in relation to the factors affecting forest degradation in Tole woreda. Therefore, the aim of this study was to assess the factors affecting forest degradation in rural households in Tole woreda, south west Shewa zone, Oromia, region.

### **1.3. Objectives**

#### **1.3.1. General Objective**

The general objective of the study is to assess factors affecting forest degradation in the study area.

#### **1.3.2. Specific objectives**

The specific objectives of the study attempt to:

1. Identify the causes of forest degradation in study area.
2. Examine the effects of forest degradation on the environment.
3. Assess the sustainable forest resource utilization and management strategies.

### **1.4. Research Questions**

The following are the basic research questions.

1. What are the causes of forest degradation in the study area?
2. What are the effects of forest degradation on the environment?
3. What are the sustainable forest resource utilization and forest management strategies?

### **1.5. Scope of the study**

Rural households found in Tole woreda are large in number which is difficult to assess the factors affecting forest degradation in this woreda. To overcome this difficulty it is necessary to demarcate the scope of the study. Hence, the work has been delimited to be done in selected Kebeles which domains households found in ArmufoTaji, KurisitAred and Bantu Boda Kebeles only.

## **1.6. Significance of the study**

The significance of the study is forest resources conservation to succeed and its use to be sustainable, knowing the factors affecting forest degradation and forest management practices have to be considered at all levels of conservation efforts. This research will also recommend concerned bodies for further investigation and for the increment of knowledge factors affecting forest degradation since these factors are identified by this assessment the society concerned body may give the solution for forest degradation and can work on preventing those factors affecting forest degradation.

## **1.7. Limitations of the study**

The study was conducted to assess the factors affecting forest degradation in rural households in Tole woreda. The process of conducting this research has not been without limitations. The researcher faced multiple and complicated situations. These include: shortage of time, lack of peace and security, financial constraints and the unavailability of document recorded (data) with regard to socio economic and demographic data and forest resource management practice of the study area. Moreover, during the time of data collection, getting the consent of respondents to have their responses for the interview schedule and focus group discussion was another challenge for this research. So as to minimize the influences of these limitations, the researcher has tried to tolerate commuting many days to get the officers and as well explained to the farmers that their responses are used only for research purpose.

## **1.8. Organization of the Thesis**

The thesis is composed of five chapters. The first chapter provides a discussion on the background and statement of the research problem. It also presents the research objectives, basic research questions, significance, scope of the study, limitation and definition of basic term are involved. The second chapter presents a review of the related literature. The overall purpose of this section is to review and analyze the conceptual, theoretical, empirical literature under the factors affecting forest degradation in the study area. This review involves the development of a conceptual framework established towards the end of this section, which is used as a guide in the development of instruments of data collection and methods of data analysis. The third chapter of the research presents the methodology of the study. In this chapter, a discussion is made on the philosophical and methodological claims of the study. In addition, the methodology part discusses the research approaches, design, data source and types, instruments of data collection, methods of data analysis, and mechanisms of checking the validity and reliability of data collection instruments. The fourth chapter presents the findings and discussion. The last chapter provides conclusions and recommendations.

## **2. Literature Review**

### **2.1. Theoretical and Empirical Literature Review**

Forest degradation is the conversion of forest to an alternative permanent non-forested land use such as agriculture, grazing or urban development. Forest degradation is primarily a concern for the developing countries of the tropics, as it is shrinking areas of the tropical forests (Barrowclough and Grimier, 2000) causing loss of biodiversity and enhancing the greenhouse effect. Forest degradation occurred at the rate of 9.2 million hectares per annum from 1980-1990, 16 million hectares per annum from 1990-2000 and decreased to 13 million hectares per annum from 2000-2010. The net change in forest area during the last decade was estimated at -5.2 million hectares per year, the loss area equivalent to the size of Costa Rica or 140 km<sup>2</sup> of forest per day, was however lesser than that reported during 1990-2000 which was 8.3 million hectares per year equivalent to a loss of 0.20 per cent of the remaining forest area each year. The current annual net loss is 37 per cent lower than that in the 1990s and equals a loss of 0.13 per cent of the remaining (Rowe et al., 1992).

### **2.2. The Causes of Forest Degradation**

#### **2.2.1. Expansion of farming land**

Shifting agriculture also called slash and burn agriculture is the clearing of forested land for raising or growing the crops until the soil is exhausted of nutrients and the site is overtaken by weeds and then moving on to clear more forest. It is been often reported as the main agent of forest degradation. Smallholder production in forest degradation and the growing number of such producers notably shifting cultivators were the main cause of forest degradation. Mostly all reports indicate shifting agriculture as responsible for about one half of tropical forest degradation and some put it up to two-thirds. Shifting agriculture was greatest in Asia (about 30 %) but only about 15% over the whole tropical world. It appears that the proportion of direct conversion of forest to agriculture is increasing and the proportion of shifting agriculture is decreasing with time (Ross, 1996).

Despite the downward trend in world coffee prices, farmers are unable to receive government assistance for anything but the cultivation of coffee. Yet, an average coffee plantation remains productive for a mere 20 years, after which time the land may be planted with grass and made into pasture for livestock, but eventually must be abandoned. This process is costly, coffee markets are unstable, and the forest continues to be cleared (Gatzweiler et al., 2007). Other forest and Plantations are a positive benefit and should assist in reducing the rate of forest degradation. The fact that plantations remove the timber pressure on natural forests does not translate eventually into less, but rather into more forest degradation indeed, it is feared that agricultural expansion which is the main cause of deforestation in the tropics might replace forestry in the remaining natural forests (Anon, 2005).

### **2.2.2. Fire wood collection**

Fire wood is usually the major cause of forest degradation. It can be in some populated regions with reduced forest area such as in the Philippines, Thailand and parts of Central America. Fire wood gathering was considered to be the main cause of forest degradation in El Salvador (Repetto, 1990) and about 80% of all fuel wood gathering is often common in the tropical dry forests (Rowe et al., 1992). Trees are deliberately felled, left to be dried and then cut and harvested as source of energy for various domestic and for market purpose.

### **2.2.3. Charcoal production**

Global charcoal production is expected to continue increasing in coming decades. The charcoal sector, which is largely informal, generates income for more than 40 million people. The environmental and social impacts of charcoal production and consumption are Extensive and intertwined, such that an integrated view is essential in policy making (Kemman, D.M. and Lew, D.J. 2005).

According to (FAO, 2017) presented policy options for creating a climate-smart charcoal sector, such as developing national policy frameworks for the sustainable management of the charcoal value chain; reforming land tenure and increasing resource access to attract new investments in a greener, healthier charcoal value chain; and making the charcoal value chain a specific component of nationally determined contributions to the mitigation of climate change. The process of charcoal production involves felling trees and burning them for as long as there has been a need for them. Some of the uses for charcoal are cooking, heating, making electricity, and sealing to sell for profit. Human and forest health are impacted by the extremely hazardous and difficult preparation process involved in producing charcoal (Vilela, A. and Lora, E. 2014).

#### **2.2.4. Rapid population growth**

Rapid population growth is a major indirect and over-arching cause of forest degradation. More people require more food and space which requires more land for agriculture and habitation. This in turn results in more clearing of forests. Arguably increasing population is the biggest challenge of all to achieve sustainable management of human life support systems and controlling population growth is perhaps the best single thing that can be done to promote sustainability (Colchester and Lohmann, 1993). Rapid population growth and low socio-economic, there is land degradation which has affected the country's ecological integrity. For instance, the forest cover of Ethiopia was 40% at the beginning of 20th century but has declined to 2.2% at present.

### **2.3. The Effects of Forest Degradation on the Environment**

The precession part of the study forest degradation is series environmental problem in Ethiopia. They are many factors affecting forest degradation in these situations, the demand for cutting trees under rural societies increases again as people get ready to cut the many trees for sale as well as other easily cut trees in preparation for the next term. Putting trees used to sale to move in different cities or towns for different construction values so town societies they want to trees for construction values. Upon completion of the first term, the money must be finished quickly. Then, the funds must be transferred to the forest areas, where additional trees must be cut down to create plans or future developments that will ensure customer fulfillment. The term

"construction values" originated from this kind of worst disturbance of a natural forest and the reasons behind the nation's forest degradation. In relation to this study, the complex factors influencing the situation that resulted in forest degradation are easily determined. One effect of forest degradation in Ethiopia is the loss of biodiversity (Mohammed, 2011). It is true that the importance of forest degradation has been shown in the form of political, sociocultural, environmental, and economic issues in a nation. Loss of biodiversity, increased soil erosion, climate change, and decreased agricultural productivity are all issues associated with forest degradation that are interconnected and work together to enforce natural phenomena. The most significant and problematic issues with treatment for survival in Ethiopia that we have observed are forest and land degradation. Drought, flooding, stream loss, soil erosion, and other related problems are caused by the misuse and degradation of forests.

According to Mohammed (2011), the loss of biodiversity and the reduction in the quantity and quality of the nation's water resources are the causes of forest degradation, which in turn leads to environmental degradation in the form of land fragmentation, overuse of water resources, and loss of biological diversity in the surrounding area. For example, the primary causes of forest degradation in the nation are linked to the disappearance of streams and the dryness of various rivers surrounding our environment (Easton, D.R., 2010).

### **2.3.1. Land degradation and Soil erosion**

Agriculture is the dominant sector of the Ethiopian economy, with 85% of the population living in the rural areas. Agriculture provides about 52% of the country's GDP, 80% of its employment, and 90% of its export earnings (World Bank, 2000; CIA, 2001). Ethiopia's economy is largely dominated by subsistence agriculture. Crop and livestock farming are the principal practices. Mixed farming dominates the Highlands, with crop and livestock farming practiced in the same management unit. The production system is mainly rain fed, subsistence based, and smallholder oriented. Crops such as barley, wheat, and beans are grown in the higher altitudes, while sorghum and maize are the principal crops in the mid and low altitudes in Ethiopian. In addition, coffee, sweet potato, chat, various vegetables, fruits, and groundnuts are extensively cultivated. Cattle, sheep, and goat constitute the livestock on the highlands. Crop and livestock yields in the highlands are very low and the recent drought has aggravated the situation. Furthermore,

population pressures have decreased the size of holdings, including both arable and pasturelands, leading to conversion of forested and marginal areas into agricultural lands (Hoekstra et al., 1990; Bishaw, 1993). Soil degradation in Ethiopia can be seen as a direct result of past agricultural practices on the highlands. The dissected terrain, the extensive areas with slopes above 16%, and the high intensity of rainfall lead to accelerated soil erosion once forest degradation occurs. Additionally, some of the farming practices within the highlands encourage erosion. These include cultivation of cereal crops such as teff (*Eragrostis tef*) and wheat (*Triticum sativa*), which require the preparation of a fine-tilt seedbed, the single cropping of fields, and the down slope final plowing to facilitate drainage. Furthermore, socio-political influences, especially insecurity of land- and tree tenure has discouraged farmers from investing in soil conservation practices. Soil degradation is thus the most immediate environmental problem facing Ethiopia. The loss of soil, and the deterioration in fertility, moisture storage capacity, and structure of the remaining soils, all reduce the country's agricultural productivity.

Soil erosion is greatest on cultivated land, where the average annual loss is 42 tons/ha, compared with 5 tons/ha from pastures. As a result, almost half of the loss of soil comes from land under cultivation, even though these lands cover only 13% of the country. Not surprisingly the highest average rates of soil loss are from formerly cultivated lands, which are currently unproductive because of degradation and have very little vegetative cover to protect them (Hurni, 1990).

The present status and rate of soil erosion in Ethiopia calls for immediate action to retard and reverse this degradation process. However, the present population growth rate of 3%, in comparison with the economic growth rate of 1% (IAR, 1991), will lead to even more intensive use of cultivatable and pasture land to produce more food and feed for the growing human and livestock populations. Hence, it is clear that intensification of land use must be accompanied by technological innovations that will lead to increased productivity, while simultaneously conserving the soil resource.

### **2.3.2. Loss of biodiversity**

When a natural habitat disappears and can no longer sustain its native species, biodiversity is lost. Overgrazing, deforestation, pollution, climate change, and invasive alien species are possible causes. The effects of the devastation may include decreased environmental quality, extinction of animal species, and insecurity of food. Once more, the food and health of the locals

who rely on forest products are directly impacted by the decline in biodiversity (Per and Rajul, 1995).

Degradation of forests results in the loss of important ecological processes, the extinction of vegetable and fruit trees, wild animal habitat, and medicinally significant trees. Biodiversity declines as a result of forest degradation (Diaz, 2006)

### **2.3.3. Climate change**

Ethiopia did not no longer purpose weather extrude, however the United States of America is faced through the risk that it poses, and need to apprehend the possibility that it presents. Climate extrude isn't a destiny opportunity for Ethiopia, it's far a gift reality.

That is why it's far vital that the United States of America commenced to shield its hum beings and environment, even as on the identical time constructing an inexperienced economic system on the way to assist to realize the targets set out within side the growth and transformation plan (Tabeau A et al., 2017). It is feared that the outcomes of whether extrude can be maximum extreme for the world's poorest nations. Africa is exceptionally prone to weather extrude with the regions of unique problem being water sources, agriculture, fitness, ecosystems and biodiversity, forestry and coastal zones. Agricultural manufacturing, which includes get right of entry to meals, in lots of African nations and sub regions is projected to be critically compromised via way of means of weather variability antitrade. The region appropriate for agriculture, the period of developing seasons and yield potential, especially alongside the margins of semi-arid and arid regions, are anticipated to decrease. This could similarly adversely have an effect on meals protection and exacerbate malnutrition within side the continent. In a few nations, like Ethiopia, yields from rain fed agriculture might be decreased via way of means of as much as 50% via way of means of 2020. The effect of weather extrude on Ethiopia is greater reported via way of means of alarming lack of wooded area useful resource. Africa has the bottom GHG emissions, but is hit toughest via way of means of weather extrude. Adaptation to the unavoidable influences of weather extrude will want sturdy help via way of means of the worldwide network and contain all stakeholders which include the personal sector (MucheyeG et al., 2017)

## **2.4. The Sustainable Forest Management**

The concept of sustainability began to increase in importance at the end of the 1980s and at the beginning of the 1990s with the Brundtland report (1987) and the Conference on Environment and Development held in Rio de Janeiro, Brazil, in 1992 (the so-called Earth Summit), respectively. Nevertheless, the need to preserve natural resources for use by future generations had long been recognized. SFM typically involves maintaining a balance between the health of the forest and the demand for its resources.

The FAO reports that the system of protected areas, which has facilitated the development of a sizable community interaction of conserved forest system, currently accounts for around 12% of the world's total forest area. There are various strategic approaches to forest conservation; these methods include the development of sustainable forest management and the conservation forest resources, which are maintained by planting trees in areas that were previously devoid of vegetation. The concept of sustainability began to increase in importance at the end of the 1980s and at the beginning of the 1990s with the Brundtland report (1987) and the Conference on Environment and Development held in Rio de Janeiro, Brazil, in 1992 (the so-called Earth Summit), respectively. Nevertheless, the need to preserve natural resources for use by future generations had long been recognized. Redistributing prepared seeds where trees cannot cover them, protecting vegetation from animal grazing, and monitoring well-growing vegetation are some of the forest conservation techniques. Another is sapling the development techniques to multiple different trees in the form of collecting and gathering the seed to prepare suitable vegetation place to develop forest area to gather and control the seeds and follow as much as recognize the place where the seeds throw with seasonal appropriate to engaged for temporary time. To maintain natural balance, it reduces climate change and enhances environmental beauty. Another method of managing forests sustainably is to plant trees and scatter seeds in areas where trees have been cut down for various environmental purposes. In order to maximize forest density, prevent gully erosion and protect the earth's degradation, and provide sustainable forest resources for the benefit of both the present and the future generations. The negative influence of past use of forest resources, as well as the needs for continued use of these resources for future generations was already noted as early as the 17th century (Glacken, 1976, as cited in Wiersum, 1995).

The ability to manage land use by combining trees with other agricultural products, livestock, and crops, as well as the technology of integrating planting trees with crop production, are characteristics of a good forestry system. The most significant factors for soil fertility, ice and water flow protection, carbon dioxide reduction, stable fresh air, shadowing of plants and animals, food production, and the growth and possibility of income are all attributed to agroforestry. The preceding elucidation of sustainable forest management focuses on how human beings' economic and sociocultural activities primarily determine the livelihoods of those who live close to forests benefit as the living generation (Schmutzenhofer, 1992, as cited in Wiersum, 1995).

Sustainable forest management, in general, refers to the preservation of natural forests, selective cutting when necessary, the balancing of the forest area, and the removal of certain trees to prevent damage. For example, planting trees to increase forest area and prevent deforestation, as well as giving young trees more time to grow large and far away in terms of convectional forest utilization, sustainable forest management techniques must respect individual forests and their resources, use them appropriately, and refrain from needless overcutting and burning of forest resources. A forest manager may employ selective logging, sustainable forest management, and resource protection from factors that contribute to forest degradation (Wang & Wilson, 2007).

The approach to forest management involves involving the local communities in the decision-making process by raising awareness about forest conservation and utilization. All parties are involved in sustainable forest management practices and the implementation of strategies and techniques at the regional government through local communities by Van Dam (2001).

## **2.5. Forest policy of Ethiopia**

Ethiopia's forest policy evolved in tandem with the country's environmental policy during the 1990s, following the 1980s. The overall goals of the environmental policy are to raise Ethiopians' standard of living and improve their health while also fostering sustainable socioeconomic development through wise use and management of the natural world, man-made environments, cultural practices, and the environment as a whole (FDRE, 2004). The wood land and tree resources states were included in the policy document under the forest to encourage all relevant entities, including individuals, communities, and the government, to actively participate in the development plan and implementation of the forestry program in order to ensure that forest degradation is minimized and that sustainable forest management practices are developed (Sisay, 2008). In addition to addressing issues like the complementary roles that communities, the state, and private entrepreneurs play in forest development, the policy also offers ideas for integrating the development of forests with the production of crops and livestock as well as land, energy, water, and genetic resources. The Ethiopian government issued Proclamation 542-2007 in 2007, which aims to encourage the preservation and use of forests. In addition, the Council of Ministers approved the policy program for forest development, utilization, and conservation in April 2007.

The proclamation establishes various guidelines for the comprehensive development, preservation, and use of state and private forest resources. Ethiopia also ratified several international conventions that align with the development of its national policies and programs regarding forests. Ethiopia's fundamental policies for conserving its forest resources are those already mentioned. The primary objective of the policy is to preserve forest resources and use forest products in a sustainable manner that upholds environmental preservation. The declaration establishes distinct laws pertaining to the comprehensive development, preservation, and use of state and private forest resources. Ethiopia also ratified several international conventions that align with the development of its national policies and programs regarding forests. Ethiopia's fundamental policies for conserving its forest resources are those already mentioned. Ethiopia has demonstrated remarkable progress in addressing forest degradation through policy and strategy (Gatzweiler, Franz W., 2007).

The country's energy policy is centered on renewable energy sources, and it encompasses environmental and forest policies. Sources are essential for the impoverished to have access to clean, inexpensive, and sustainable energy, which has a significant positive influence on the preservation of forests in both rural and urban areas (FDRE, 2011). One of the advantages of Ethiopia's forest policy is that it lays out a plan to accelerate the amount of land covered by forests every five years.

## 2.6. Conceptual Framework

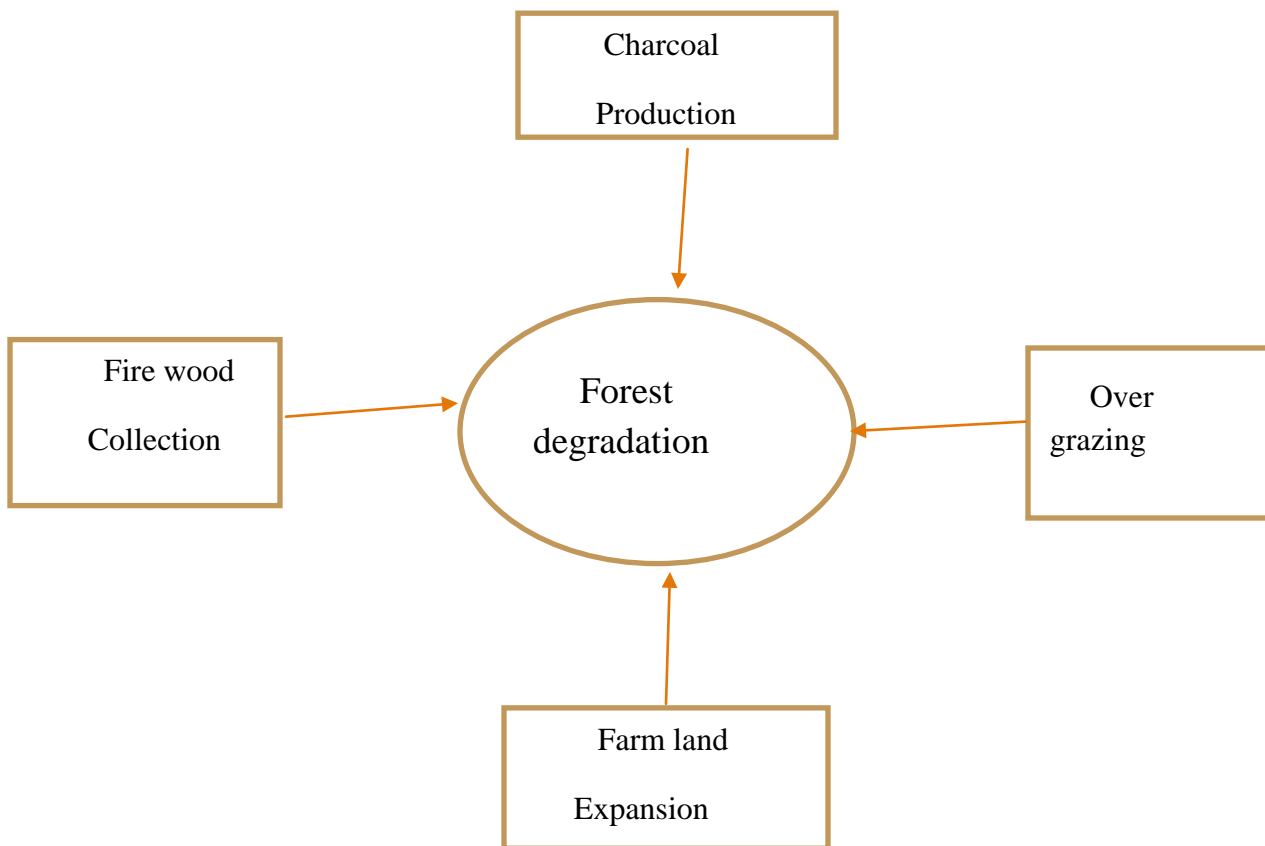


Fig: 1 causes of forest degradation

Source: own conceptual framework

### 3. Research Methodology

#### 3.1. Description of the Study Area

##### 3.1.1. Geographic location

Tole woreda is located in Oromia region more precisely in the South west Shewa zone about 85 km far away from Addis Ababa city in the south eastern direction and at about 80 km from Woliso town, the capital city of south west Shewa zone, in the south eastern direction CSA (2007). Astronomically located between  $8^{\circ}.30'N$  and  $8^{\circ}.45' N$  latitudes and  $38^{\circ}.18'E$  to  $38^{\circ}.32'45'' E$  longitudes. It is bounded by Ilu and Sebeta Hawas district in the North, Bacho district in the West, Saden Sodo and Karsa Malima in the South

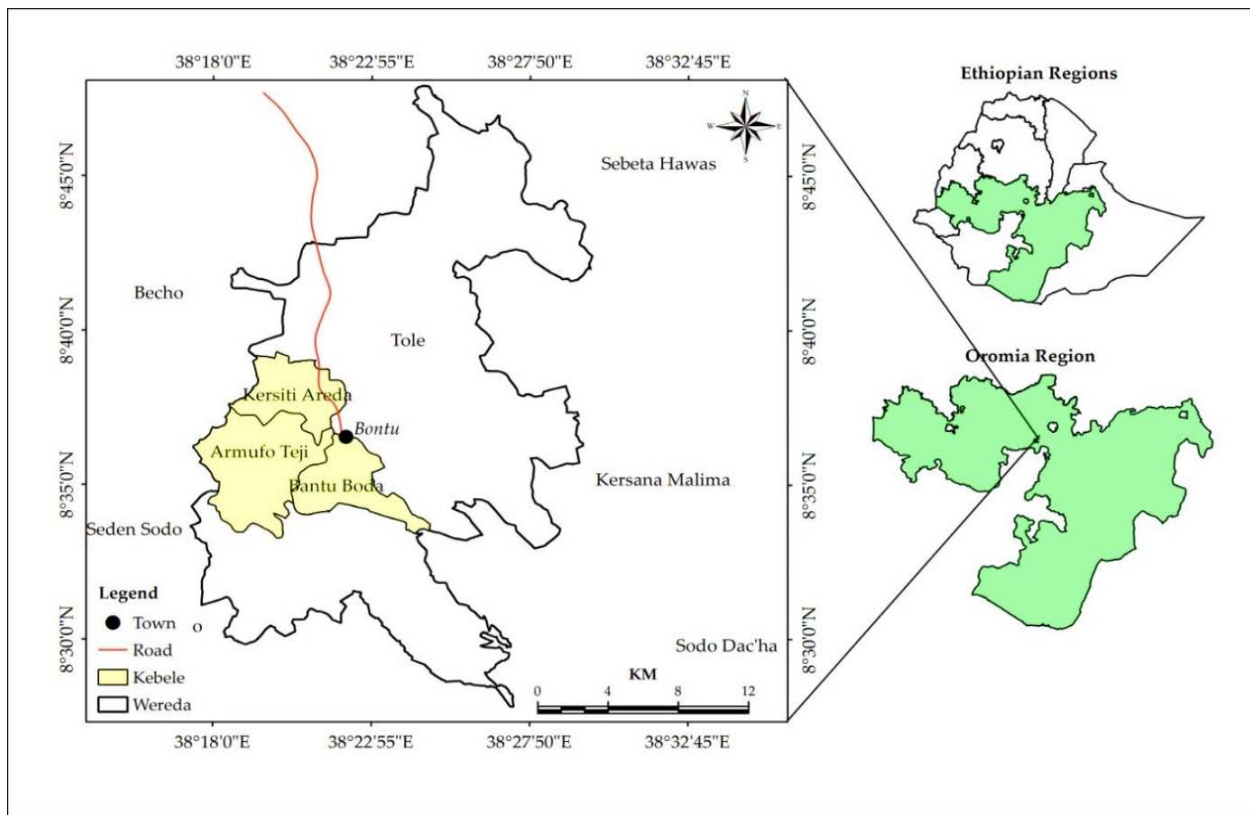


Fig: 2 map of the study area

Source: (CSA 2007)

### **3.1.2. Topography**

The altitudinal ranges woreda is 2,150 to 3,100 meters above sea level (m.a.s.l). The lowest elevation is found in the northern part of the of the district, while the highest elevation in the southern part based on its agro ecology, the district is divided in to two: the mid-highland (bada-dare) which lies below 2500m.a.s.l., and the highland (bada) which is above 2500m.a.s.l. then 80% of the district's area is covered by mid-highland agro-ecology, while the remaining 20% is under highland. Tole woreda Agricultural office report (2011)

### **3.1.3. Climate of the study area**

Agro-climate zone of the study area is the mean annual temperature in mid-highland range 18<sup>0</sup>c to 20<sup>0</sup>c, while the highland agro-ecology area ranges from 13<sup>0</sup>c to 18<sup>0</sup>c (Tole woreda Agricultural office report 2019).

### **3.1.4. Vegetation of the study area**

Based on altitudinal range classifies the natural vegetation of the study area in to highland forest (Beda) like, Juniper, Pod carpus above 2150 m.a.s.land mid-high land forest (Bed-Dare) like, shola and warka grow below 2150m.b.s.l. are vegetation of the study area.

### **3.1.5. Wildlife of the study area**

As collected information from the field of the study area various species of wildlife existed including, birds, reptiles and large wild animals and amphibians.

### **3.1.6. Demographic and Socioeconomic Characteristics of the study area**

According to the 2007 census, Tole woreda has a total population of 97000 and of which, 48,588 of them males and 48,412 of them are females. The people of the woreda are the follower of Ethiopian Orthodox Christianity, Protestant the majority of the inhabitants said they were Orthodox Christian, with 54% of the population reporting they observed this belief, while 15% is protestant. Ethnic composition of the population of Tole woreda is composed of different ethnic groups, but the majorities are Oromo and Amara people (CSA, 2007).

### **3.2. Research Designs**

The researcher had used mixed research design which had incorporated both qualitative and quantitative research methods. The main reason for using qualitative approaches was that it was framed using words/data's for open ended questions, interviews, Focus Group Discussion, observation, While quantitative approaches allow testing of theories, control for alternative explanation and builds protection against bias.

Therefore a mix of quantitative and qualitative approach was ideal because it had provided the quantifiable impacts as well as on explanation of the process and relationships that yield the expected out comes.

### **3.3. Data sources**

The researcher was focused on both primary data and secondary data.

The primary data had been collected through distribution of both open ended and closed ended questionnaires, semi-structured interviews because the researcher had a list of issues and questions, in which the direction of questions may change and asked additional questions, and informal group discussions with elders, agricultural office experts, developmental agent and kebele administrators conducting field observation to gather information about factors affecting forest degradation from farmers `and check if there was communication gap between farmers and extension workers.

The Secondary data was gathered from different published and unpublished sources such as woreda agricultural office, books, research reports, document analysis from zonal and woreda office and other electronic media (internet).To meet the objective of the study used descriptive research cross-sectional designs with qualitative and quantitative research approach mixed research along with empirical analysis. The triangulation variant of mixed methods approach was employed as data were generated from different set of respondents such as local residents and various sources. Because we can collect data at a single point in time, cross-sectional studies are relatively cheap and less time-consuming than other types of research. Moreover, the design allows collecting data from a large pool of subjects and comparing differences between groups.

### 3.4. Sample Size and Sampling Techniques

The researcher purposively selected three Kebeles out of 25 Kebeles because the factors affecting forest degradation were not similarly in Woreda. Since the forest degradation was limited to a certain Kebeles, the researcher selected purposively three Armufo, Bantu Boda, and Kurisit, where the factors affecting forest degradation are dominantly seen. The additional reason why the researcher selected this area was that because, he was familiar with the area very well and this helps him to perform the research activities effectively and efficiently. The sample household heads were selected from each three kebele by using random sampling method. Based on these, 97000 and 1098 household were identified in Armufo, Bantu Boda, and Kurisit respectively. Hence, the total household of the three Kebeles are 1200 and required were 174 SHS. Therefore, a representative sample size with known confidence and risk levels was selected, based on the work of Kothari, 1990 which helps the researcher to conduct a real research since it reduces or lowers the sample size. For example if the researcher uses Yamane, 1967, formula the sample size must be larger which attracts the researcher to false information rather than conducting a real research. The level of precision was the range in which the true value of population is estimated. Finally, the sample size was calculated as follows,  $n = \frac{N}{1 + N(e)^2}$

$N$  = total number of households

$e$  = level of precision (sampling error) = 0.07. Then,

$N=1200$ ,  $n = \frac{1200}{1+1200(0.07)^2} = 174$  respondents

Where  $N = n_1 + n_2 + n_3 = 400 + 390 + 410 = 1200$  THH

The proportional size of the population:  $n = \frac{n}{N} \times 100 = \frac{174}{1200} \times 100 = 14.5\%$ . Next,  $n = 14.5/100 \times 400 = 58$ ,  $14.5/100 \times 390 = 57$ , and  $14.5/100 \times 410 = 59$ . Thus, the sample households selected for Armufo is  $n = 58$ , for Bantu Boda it is  $n = 57$ , and for Kurisit it is  $n = 59$  respectively.

Table 1 Total House Holds of the three Kebeles and sample size taken

Woreda	Selected Kebeles	Total households			Sample households selected (SHS)		
		M	F	T	M	F	T
Tole	Armufo	370	30	400	49	9	58
	Bantu Boda	355	35	390	47	10	57
	Kurisit	373	37	410	48	11	59
	Total	1098	102	1200	144	30	174

Source: Survey, 2024

### 3.5. Instrumental Tools of Data Collection

#### I.Questionnaire

Regarding the household survey, structured/standardized/questionnaires were used because respondents were free from biases of the researcher, answers were in respondents' own words, the flow of data was quick and from many people and they were low cost in terms of money and time, in which both open and closed ended questions were designed to get information on the assessing role of traditional land management practices from respondents. Since farmers in the study area speak Afan Oromo, questionnaires were initially prepared in Afan Oromo for them and translated to English for analysis and interpretation. Closed ended questions enabled the respondents to select one option that meet their own views while, open-ended question was designed to give alternatives to the respondents to express their feelings and perceptions concerning the problem under study.

## II. Key Informants Interview

The purpose of interview was obtaining more information to strengthen the responses that will be gained through questionnaires. Semi-structured interview will be conducted due to its flexibility for researcher's to raise new question and ideas based on the response of the interviewee and the researcher may change the direction of questions as new ideas raises and additional questions may be asked in the study area. Due to financial and time constraints it is difficult to involve all peoples for interview. As a result it will be conducted with (12) key informants involving one respondent from each Kebele Administrators, Agricultural Experts, Local elders and selected farmers. To avoid language barriers the interview will be conducted in Afan Oromo and finally translated to English for analyzing and interpretation.

Table 2 Sample Number of People Selected For Interview

No.		Agricultural Experts	Kebele administrator	Local elders	Selected farmer	Total
1	Armufo	1	1	1	1	4
2	Bantu Boda	1	1	1	1	4
3	Kurisit	1	1	1	1	4
Total		3	3	3	3	12

Source: survey, 2024

## III. Focus Group Discussion (FGD)

For the focus group discussion (FGD), the researcher had selected a total of 8 respondents from model farmers who are known to have better knowledge on the present and past forest status of the study area. The purpose of FGD was to get insights on and understand the factors affecting forest degradation and forest degradation effects on environment in the study area.

The composition of the kebele focus group members included local elders, kebele chairman, DA (Agricultural workers) and selected farmers had been selected based on socially respected within the society and who are having better knowledge on the present and past condition of the environment and forest status of the study area.

Table 3 Number of Focus Group Discussion

Kebeles	participants				Total
	Local elders	Kebele chairman	DA(Agricultural workers)	Selected farmers	
Armufo	2	1	2	3	8
Bantu Boda	2	1	2	3	8
Kurisit	2	1	2	3	8

Source: survey, 2024

#### IV. Observation

Personal observation of the study area was made by the researcher to gather further accurate and first-hand information. It also enhances the validity and reliability of the collected data. The data collected by the key informant’s interview, Focus Group Discussion (FGD) and observation was qualitatively analyzed. The main reason to apply different data collection techniques were for checking of the validity and consistency of the compiled information.

#### Methods of Data Analysis

In analyzing the data obtained from primary and secondary sources, both qualitative and quantitative techniques were applied. The qualitative data were gathered through field observation, focus group discussion and interview were analyzed thematically and presented in the form of narration and used as supportive data to the main questionnaire. Whereas quantitative data were generated from the questionnaire and were tabulated and summarized by using frequency and percentage., differentiate demographic and socio-economic characteristics of households, the rate of forest degradation, and thefarmer’s perception on the current status of forest degradation, localcommunity’s wise use of forest resources and unwise use of forest resources by comparing to sustainable forest management using SPSS computer Software. Frequency and percentage were used as ways of data presentation. The nature of forest degradation andfactors affecting forest degradation employed by rural households in the study area and the results were summarized in the form of tables.

## 4. Result and Discussion

This chapter presents the main results obtained from household survey, key informant interviews and secondary data sources. Presented and summarized the information about respondents' characteristics and detailed analysis on the factors affecting forest degradation in rural house hold in Tole woreda south west Shewa, Oromia, region. The researcher applied the introductory of each specific part, analysis of the data obtained from questionnaires, cross tabulating the questionnaires with the information obtained via interview, FGD and observation.

In the study 174 respondents were participated. The first section provides socio demographic characteristics of respondents. A variety of data visualization techniques, including tables, charts, diagrams were used. Lastly, the author has made an effort to bolster the findings with pertinent local research.

### 4.1. Socio Demographic Characteristics of Respondents.

Table 4age structure of the head of households

Age range	Frequency	Percent
15-24	18	10.3
25-34	49	28.0
35-44	38	21.8
45-54	31	17.8
55-64	15	8.6
65-74	17	9.8
75-84	6	3.4
Total	174	100.0

Source: survey,2024

## Sex

Table 5 sex of head of households

Sex	Frequency	Percent
male	143	82.2
Female	31	17.8
Total	174	100.0

Source: survey, 2024

About 97,000 people living in Tole Woreda, 48,588 of whom are men and 48,412 of whom are women (2007 CSA). 31 (17.8%) of the 174 sample households had chosen female head of household while 143 (82.2%) had chosen male heads of household.

## Marital status

Table 6 marital status of the head of households

Marital status	Frequency	Percent
Single	41	24
Married	113	66
Divorced	14	8.2
Widowed	3	1.8
Total	171	100.0

Source: survey,2024

In terms of marital status, 41 respondents (24%) reported being single, while 112 respondents (66%) said that they were married. Once more, 3 respondents (1.8%) were widowed, and 14 respondents (8.2%) had previously been divorced. There is a connection between factors influencing forest degradation and marital status, as will be discussed below, as single people degrade forests less than married people.

## Family size

Table 7 family head of the households

family size	Frequency	Percent
1-5	84	49.7
6-10	72	42.6
11-15	13	7.7
Total	169	100.0

Source:survey, 2024

The family size of households from 1 to 15, with 84 respondents (49.7%) reporting between 1 and 5 families, 72 respondents (42.6) reporting between 6 and 10 families, and 13 respondents (7.7) reporting between 11 and 15 families. Thus, the largest family size in the study area 49.7%, which is correlated with the factors affecting the degradation of the forest in the study area.

## Household income

Table 8 monthly income of households

Income of house holds	Frequency	Percent
250-650	48	27.6
651-1050	41	23.6
1051-1450	15	8.6
1451-1850	13	7.4
1851-2250	17	9.7
2251-2650	6	3.4
2651-3050	4	2.3
3051-3450	8	4.6
3451-3850	9	5.2
3851-4250	4	2.3
4251-4650	7	4
4651-5050	2	1.1`
Total	174	100.0

Source: survey, 2024

Regarding to monthly income of households the amount of money that each household get varies, somewhat included categories from daily activities could include the public and private sectors, as well as self-employed entrepreneurs with high or low incomes. The family's monthly income ranges from 250-5050 Ethiopian Birr.

## Educational status

Table 9 educational status of the respondents

Educational status	Frequency	percent
Literate	51	29.6
Illiterate	43	25
Elementary school	40	23.3
High school	25	14.5
University/college	13	7.6
Total	172	100.0

Source: survey, 2024

Regarding to the educational status of the respondents 51 (29.6%) said that they could read and write, while 43(25%) respondents were they couldn't read and write whenever 23(23.3%) of the respondents were secondary school education completed and 25(14.5%) of the respondents were elementary education completed whereas 13(7.6%) respondents were joined higher educational level.

## 4.2. Issue Related to Factors Affecting Forest Degradation

The respondents identified firewood collection, charcoal production and farm land expansion are the main factors affecting forest degradation in the study area.

Table 10 the main factors affecting forest degradation in the study area

Factors affecting to forest degradation	Frequency	Percent
Fire wood collection	92	52.9
Charcoal production	49	28.2
Farm expansion	33	18.9
Total	174	100.0

Source: survey, 2024

According to table 7 the most respondents about 92 (52.9%) reported that firewood collection was the main factor that resulted in forest degradation. About 49(28.2%) of respondents reported that charcoal production was the second factor that resulted in forest degradation and about 30(18.9%) of respondents reported that farmland expansion was the third factor that resulted in forest degradation in the stud area.



Fig: 3 Firewood collection  
Source: own survey



Fig: 4 Charcoal production  
Source: survey, 2024



Fig: 5 Forest degradation demand for farmland expansion.  
Source: survey, 2024

Table 11 Forest degradation rate and level of agreement

Scale of forest degradation	Frequency	Percent
High	143	82.1
Medium	21	12.1
Low	10	5.8
Total	174	100.0

Source: survey, 2024

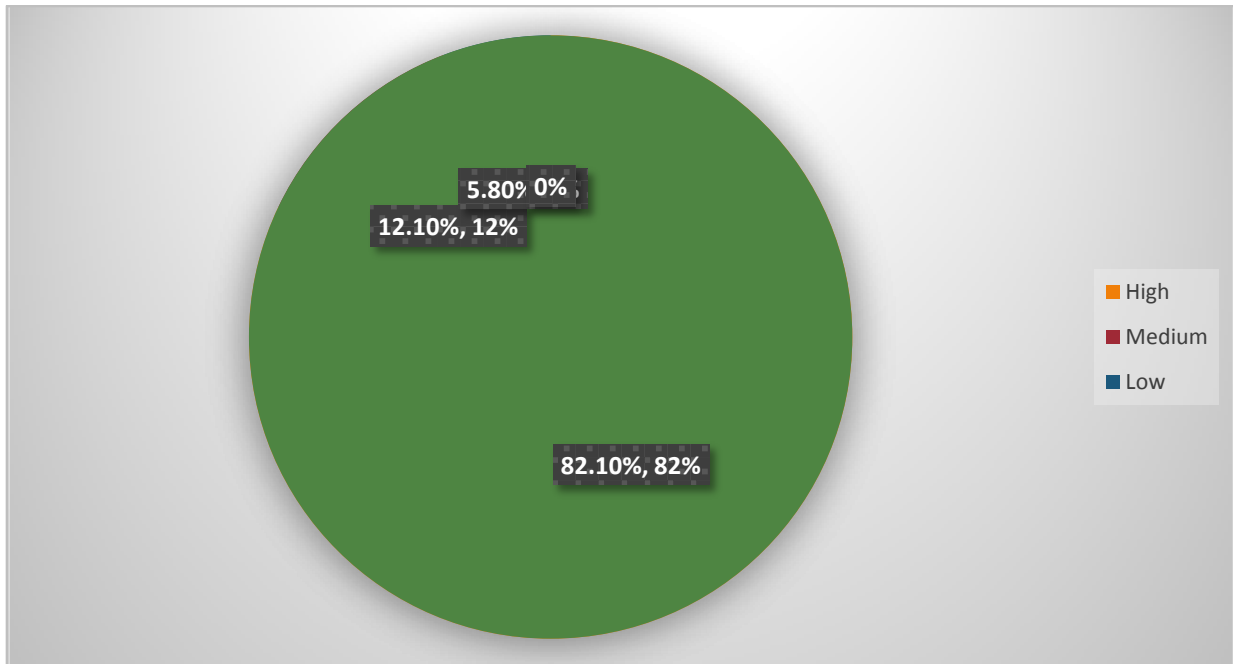


Fig: 6 the rate of forest degradation

Source: survey, 2024

According to table 8 most of the respondents 143 (82.1%) said that the rate of forest degradation was high because local communities practices forest degradation demand for livelihood activities. About 21 (12.1%) respondents were reported that forest degradation was medium and only 10 (5.8%) respondents reported that forest degradation was low in the study area.

### **4.3. Issue Related to the Effects of Forest Degradation on the Environment**

Table 12 farmer’s perception on the current status of forest degradation in selected kebele

Negative effect of forest degradation	Frequency	Percent
on land degradation and soil erosion	92	52.9
on climate change	50	28.7
on loss of biodiversity	32	18.4
Total	174	100.0

Source: survey, 2024



Fig: 7 Negative effect of forest degradation on soil erosion

Source: survey, 2024

As it was mentioned in table 9 about 92(52.9%) of the respondents were known that forest degradation has negative effect on land degradation and soil erosion that lead to the decline of agriculture productivity and 50(28.7%) of the respondents were known that forest degradation has negative effects on climate change. Whereas 32(18.4%) of the respondents were known forest degradation has negative effect on loss of biodiversity in the study area.

#### 4.4. Techniques for Forest Management Practices in Relation to Conventional Forestry Utilization

The various forest stakeholders and those who implement forest conservation techniques were displayed in the following table.

Table 13 the stakeholders of forest degradation

The stakeholders	Frequency	Percent
Local communities	100	58.5
Governments	46	26.9
Non-governments	15	8.8
Religious leader	10	5.8
Total	171	100.0

Source: survey, 2024

According to table 10 about 100(58.5%) respondents believe that local communities have responsible and protect forest resources and promote sustainable development for current and future generation and 46(26.9%) respondents believe that governments the main contribution protection of forest resources by using rule and regulation of forest resource protection method and 15(8.8%) respondents believe that Non-government make protection and conservation initiatives involvement collaboration with local communities and 10(5.8%) respondents believe that religious leader suggestion the people to provide sustainable forest resources.

Table 14 the solutions to forest degradation

The solutions	Frequency	Percent
Protecting of detail forest resource	88	50.6
Adopt green legacy	4	24.1
Societies participation in decision- making	44	25.3
Total	174	100.0

Source:survey, 2024

According to table 11 about 88 (50.6%) respondents believe that protecting of detail forest resource is very important and 44 (25.3%) respondents believe that community involvement in decision-making is the best option for forest conservation and sustainable forest management practices and 42 (24.1%) respondents believe that the adopting green legacy is the solution to forest degradation in the study area.

## **5. Discussion and Conclusion**

### **5.1. Discussion**

Forest degradation is the process of removing forest areas and using the land for other uses such as firewood collection, charcoal production and farmland expansion, over grazing and for other purpose. Forest degradation reduces the supply of forest products and leads to loss-biodiversity, climate change, reduce agriculture productivity, soil erosion and land degradation. The researcher had used mixed research design which had incorporated both qualitative and quantitative research methods. The main reason for using qualitative approaches was that it was formed using for open ended questions, interviews, Focus Group Discussion, observation, While quantitative approaches allow testing of theories, control for alternative explanation and builds protection against bias. Therefore a mix of quantitative and qualitative approach was ideal because it had provided the quantifiable impacts as well as on explanation of the process and relationships that yield the expected out comes.

The researcher was focused on both primary data and secondary data. The primary data had been collected through distribution of both open ended and closed ended questionnaires, semi-structured interviews because the researcher had a list of issues and questions, in which the direction of questions may change and asked additional questions, and informal group discussions with elders, agricultural office experts, developmental agent and kebele administrators conducting field observation to gather information about factors affecting forest degradation from farmers and check if there was communication gap between farmers and extension workers.

The Secondary data was gathered from different published and unpublished sources such as woreda agricultural office, books, research reports, document analysis from zonal and woreda office and other electronic media (internet). To meet the objective of the study used descriptive research cross-sectional designs with qualitative and quantitative research approach mixed research along with empirical analysis. The triangulation variant of mixed methods approach was employed as data were generated from different set of respondents such as local residents and various sources. Because we can collect data at a single point in time, cross-sectional studies are relatively cheap and less time-consuming than other types of research. Moreover, the design allows collecting data from a large pool of subjects and comparing differences between groups.

The researcher purposively selected three Kebeles out of 25 Kebeles because the factors affecting forest degradation were not similarly in Woreda. Since the forest degradation was limited to a certain Kebeles, the researcher selected purposively three Armufo, Bantu Boda, and Kurisit, where the factors affecting forest degradation are dominantly seen. The additional reason why the researcher selected this area was that because, he was familiar with the area very well and this helps him to perform the research activities effectively and efficiently. The sample household heads were selected from each three kebele by using random sampling method. Based on these, 97000 and 1098 household were identified in selected area. Hence, the total household of the three Kebeles are 1200 and required were 174 SHS. Therefore, a representative sample size with known confidence and risk levels was selected, based on the work of Kothari, 1990 which helps the researcher to conduct a real research since it reduces or lowers the sample size. For example if the researcher uses Yamane, 1967, formula the sample size must be larger which attracts the researcher to false information rather than conducting a real research. The level of precision was the range in which the true value of population is estimated.

Finally, the sample size was calculated as follows,  $n = \frac{N}{1+N(e)^2}$ . Regarding the household survey, structured/standardized/questionnaires were used because respondents were free from biases of the researcher, answers were in respondents' own words, the flow of data was quick and from many people and they were low cost in terms of money and time, in which both open and closed ended questions were designed to get information on the assessing role of traditional land management practices from respondents. Since farmers in the study area speak Afan Oromo, questionnaires were initially prepared in Afan Oromo for them and translated to English for analysis and interpretation. Closed ended questions enabled the respondents to select one option that meet their own views while, open-ended question was designed to give alternatives to the respondents to express their feelings and perceptions concerning the problem under study. The purpose of interview was obtaining more information to strengthen the responses that will be gained through questionnaires. Semi-structured interview will be conducted due to its flexibility for researcher's to raise new question and ideas based on the response of the interviewee and the researcher may change the direction of questions as new ideas raises and additional questions may be asked in the study area. Due to financial and time constraints it is difficult to involve all peoples for interview. As a result it will be conducted with (12) key informants involving one respondent from each Kebele Administrators, Agricultural Experts,

Local elders and selected farmers. To avoid language barriers the interview will be conducted in Afan Oromo and finally translated to English for analyzing and interpretation. For the focus group discussion (FGD), the researcher had selected a total of 8 respondents from model farmers who are known to have better knowledge on the present and past forest status of the study area. The purpose of FGD was to get insights on and understand the factors affecting forest degradation and forest degradation effects on environment in the study area. The composition of the kebele focus group members included local elders, kebele chairman, DA (Agricultural workers) and selected farmers had been selected based on socially respected within the society and who are having better knowledge on the present and past condition of the environment and forest status of the study area.. In analyzing the data obtained from primary and secondary sources, both qualitative and quantitative techniques were applied.

The qualitative data were gathered through field observation, focus group discussion and interview were analyzed thematically and presented in the form of narration and used as supportive data to the main questionnaire. Whereas quantitative data were generated from the questionnaire and were tabulated and summarized by using frequency and percentage., differentiate demographic and socio-economic characteristics of households, the rate of forest degradation, and the farmer's perception on the current status of forest degradation, local community's wise use of forest resources and unwise use of forest resources by comparing to sustainable forest management using SPSS computer Software. Frequency and percentage were used as ways of data presentation. The nature of forest degradation and factors affecting forest degradation employed by rural households in the study area and the results were summarized in the form of tables. In the study 174 respondents were participated. The first section provides socio demographic characteristics of respondents. A variety of data visualization techniques, including tables, charts, diagrams were used. Lastly, the author has made an effort to bolster the findings with pertinent local research. About 31 (17.8%) of the 174 sample households had chosen female head of household while 143 (82.2%) had chosen male heads of household. In terms of marital status, 41 respondents (24%) reported being single, while 112 respondents (66%) said that they were married. Once more, 3 respondents (1.8%) were widowed, and 14 respondents (8.2%) had previously been divorced. There is a connection between factors influencing forest degradation and marital status, as will be discussed below, as single people degrade forests less than married people. The family size of households from 1 to 15, with 84

respondents (49.7%) reporting between 1 and 5 families, 72 respondents (42.6) reporting between 6 and 10 families, and 13 respondents (7.7) reporting between 11 and 15 families. Thus, the largest family size in the study area 49.7%, which is correlated with the factors affecting the degradation of the forest in the study area. According to table 7 majority of the respondents 92 (52.9%) said that firewood collection was the major factor that resulted in forest degradation.

About 49(28.1%) of respondents reported that charcoal production was the second factor that resulted in forest degradation and 30(17.2%) of respondents reported that demand for farmland expansion local communities clearing forest lead to forest degradation and only 3(1.7%) of respondents reported that overgrazing was factor that resulted in forest degradation in the stud area.As it was mentioned in table 9 about 92(52.9%) of the respondents were known that forest degradation has negative effect on land degradation and soil erosion that lead to the decline of agriculture productivity and 50 (28.7%) of the respondents were known that forest degradation has negative effects on climate change. Whereas 32(18.4%) of the respondents were known forest degradation has negative effect on loss of biodiversity in the study area.According to table 10 about 100(58.5%) respondents believe that local communities have responsible and protect forest resources and promote sustainable forest development for current and future generation and 46(26.9%)respondents believe that governments also the main contribution protection of forest resources by using limited rule and regulation for forest resource protection and 15(8.8%)respondents believe that Non-government make protection and conservation initiatives involvement collaboration with local communities and 10(5.8%) respondents believe that religious leader suggestion the people to provide sustainable forest resource management.

## 5.2. Conclusion

Forests are one of important resources for rural households. In rural area forests provide critical support to agricultural production, they provide food, fodder, fuel, medicines, cultures and countless belongings. Even though, the productivities of forest resources are falling. Farmer's indigenous knowledge about forest ecology. The deteriorating health of physical environment due to unorganized and indiscriminate use of natural resources has given rise to problems which make environmental management necessary.

Forest degradation is the clearing away of forests by a process in which an area depleted its existing natural forest vegetation and resources. Firewood collection, charcoal production, clearing forest demand for farmland expansion, and over grazing are main causes of forest degradation in rural households in Tole woreda. Defined, forest degradation is the removal or damage of vegetation in the forest, to the extent that it no more supports its natural flora and fauna.

In other words, forest degradation is the transformation of forest land to non-forest land. Forests degradation is one of the serious problems in the study area, as observed during the site assessment and observation. Consummate of the hillsides are vacant of vegetation as a result of continued destruction of the natural forests without management and protection. Rural households within the study area has to move long distances to chop down the first available tree to obtain wood for fuel and construction values specially the selected kebele in Tole woreda. Forest degradation caused by smallholders can be reduced forest resource demand for expanded farm land, charcoal production, firewood collection, and overgrazing in the study area. Forest degradation has many negative effects on the environment, including climate change, soil erosion, and loss of biodiversity, land degradation and decline agriculture productivity. The Strategies to reduce forest degradation, includes reducing greenhouse gas emission and increase forest area and standard of management of protected areas, Promote sustainable management, increase area of forest plantation and strengthen government and non-government institutions and policies. The finding described that local people accept relevant information on forest degraded that could be important for management aimed at the sustainable use and conservation of natural resources.

### **5.3. Recommendations**

Based on the above findings the following recommendations were forwarded.

1. Harvesting trees responsibly by using selective logging, which involves only harvesting mature trees of specific species.
2. Support protected areas and reforestation projects.
3. Reduce your consumption of products that contribute to forest degradation, such as palm oil, beef and soy.
4. Growing more trees is one of the easiest ways to help the planet.
5. Prefer buying recycled goods and products with a recycling icon
6. Develop contemporary energy, particularly electricity, is crucial to reducing the consequences of firewood
7. Conservation initiatives involve collaboration between governments, NGOs and local communities to safeguard ecosystems.
8. Governments and organizations can support sustainable livelihoods, such as ecotourism, non-timber forest product harvesting and sustainable agriculture.

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## **Appendix-A**

**Addis Ababa University**

**College Of Social Science and Humanities**

**Department Of Geography and Environmental Studies**

**Structured Household survey questionnaire on the factors affecting forest degradation in rural household and food insecurity**

**Introduction**

Dear all of you willing to fill this questionnaire, The purpose of this questionnaire is for academic purpose and designed as input for research to be conducted in particular fulfillment of the requirement for the degree of masters at school of graduate studies of Addis Ababa university so, appreciate that you are taking part in this questionnaire and your participation invaluable.

Thank you in advance for giving me your time and for your assistance.

Instruction: Encircle the letter that indicates your response or put tick mark in the box or give your suggestion on space provided corresponding to your level of agreement.

**Part I: General information (personal profile)**

1. Woreda \_\_\_\_\_ Kebeles \_\_\_\_\_

2. Household age: \_\_\_\_\_

3. Household sex: Male \_\_\_\_\_ Female \_\_\_\_\_

4. Level of Education: \_\_\_\_\_ illiterate \_\_\_\_\_ literate \_\_\_\_\_ elementary \_\_\_\_\_

High school \_\_\_\_\_ college or university \_\_\_\_\_

5. Marital status: Married \_\_\_\_\_, Unmarried \_\_\_\_\_, Divorce \_\_\_\_\_

6. Average monthly income of the household's \_\_\_\_\_

7. Family size: Male \_\_\_\_\_ Female \_\_\_\_\_ Total \_\_\_\_\_

8. For how long you have lived in this area? \_\_\_\_\_

**Part II: Issue related the factors affecting forest degradation**

9. What are the major causes of forest degradation in the study area?

(a) Fire wood collection (b) over grazing

(c) Charcoal production (d) farm land expansion

10. What are the effects of forest degradation on the environment?

(a) Loss of Bio-diversity (b) Soil erosion

(c) Land degradation (d) climate change

11. Fire wood and charcoal are the main fuel energy and income of the local communities?

(a) Yes (b) No

**Forest degradation rate and level of agreement**

**Direction:** In the following List you will find the causes of forest degradation rate and level

Following by putting tick mark in the box corresponding to your level of agreement 11.1- 11.5  
(5=strongly agree, 4=agree, 3=undecided, 2=disagree, 1=strongly disagree)

No	Items	5	4	3	2	1
11.1	Fire wood collection					
11.2	Charcoal production					
11.3	Construction values					
11.4	Livestock herders					
11.5	Forest clearing for farm expansion					

12. Do you have livestock? (a) Yes (b) No

13. If your answer to question No. 12, is 'yes' tell where they grazing now?

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**Part III: Techniques for forest management practices in relation to conventional forestryUtilization**

14. Do you think are local societies abuse forest resource in the study area?

15. If your answer to question No.14, is "yes" what are the solution?

16. Are there sustainable forest management in the study area?

(a) Yes (b) No (c) Unknown

17. Concerning forest degradation, local communities participate in decision making processes?

(a) Yes (b) No

18. Have you learn the local communities about forest conservation?

(a) Yes (b) No

19. What are the important points to upset the existing forest degradation?

(a) Conduct detail study of forest resources

(b) Forest management necessity continuous monitoring and participatory approaches

(c) Community participation in decision- making

(d) Other, if any\_\_\_\_\_

## **Appendix-B**

**Addis Ababa University**

**College of social Sciences**

**Department of Geography and Environmental Studies**

**Interview Guide for key Informants selected from the local communities, governmental and non-governmental institution as well socio-cultural organization.**

1. What should be done to minimize the forest degradation?
2. What is the best income of the local communities?
3. Fire wood and charcoal is the main fuel energy and income of the local Communities?
4. Do you have livestock, if you have where you grazing now do?
5. How does forest degradation is linked with food insecurity at the household level?
6. Who are involved in forest conservation and to bringing the sustainable forest management practice?

### **Question for Focus Group Discussion**

1. For how long you have lived in this area?
2. How do you understand about forest degradation?
3. What do you think are the root factors affecting forest degradation of the local communities?
4. What are the main causes of forest degradation?
5. What are the effects of forest degradation on the environment?
6. According to your perception what are the solutions to forest degradation in the study area?

Thanks!

## Appendix-C

Addis Ababa University

College of social Sciences

Department of Geography and Environmental Studies

**Observation Checklist: Indicate your response by putting tick mark in the box**

Items	Yes	No
Clearing forest for farm land expansion		
Collecting fire wood for cooking and sale		
Charcoal making		
Livestock are Grazing in the forest		
Soil erosion		
Cutting trees for construction values		