



## Review: Assessing the Impact of Deforestation on farmers Livelihoods in Ethiopia

**Tekilil Wolde\***

*Wolkite University, College of Agriculture and Natural Resource, Department of Natural Resource Management, Ethiopia*

**\*Corresponding Author:** Tekilil Wolde, Wolkite University, College of Agriculture and Natural Resource, Department of Natural Resource Management, Ethiopia.

**Received:** December 09, 2024

**Published:** December 20, 2024

© All rights are reserved by

**Tekilil Wolde.**

### Abstract

Ethiopia is one of the most severely affected countries in sub-Saharan African countries, particularly by deforestation, which resulted in soil erosion, loss of biodiversity and degradation of agricultural land. The full implication of loss of forest resources as well as the root causes should be recognized in order to conserve and manage the remaining vegetation cover of the country. The objective of this review is to assess the Impact of Deforestation on Farmers Livelihoods. And also the review has the objective on the impacts of forest destruction on biodiversity and to identify the major cause of forest destruction in Ethiopia. Deforestation, inappropriate agricultural practices, overgrazing and agricultural land expansion have been the major cause of land degradation and desertification. Poor and vulnerable households depend on forest products like charcoal and firewood for their livelihood. Deforestation, accelerated soil erosion, and land degradation are serious problems in Ethiopia rising demand for forest products, population growth, low perception of inhabitants towards environmental roles of forest, lack of alternative economic activities and land holding conditions of the populations are the major causes of forest destruction. Moreover, failure to relate forestry policy to overall development, lack of commitment at individual level and organizational and lack of rural participation in forest conservation are some of the prevailing constraints of forest resources. Therefore, it is suggested that among other things, increasing the real income of the farmers, diversifying the rural economy, subsidizing basic commercial farm inputs, providing affordable fuel wood, incorporation of local knowledge, resolving conflicts between users' rights and management responsibility through introducing benefit sharing systems and awakening the farmers continuously on issues related to forest resource management and family planning must receive policy attention to reduce forest destruction.

**Keywords:** Deforestation; Farmers; Livelihood

### Introduction

Forest and the benefits it provides in the form of wood, food, income generation, watershed conservation, biodiversity preservation, carbon dioxide sequestration play a critical role in enabling people to secure stable and adequate food supply. Population increase has resulted in extensive forest clearing for agricultural land expansion, overgrazing and exploitation of existing forest for energy consumption, construction material, logging, timber production and wild fire. Forest areas have been reduced from 40% century ago to an estimated less than 3% today. The current rate of deforestation is estimated at 160,000-2,000,000 hectares per year [4].

According to [7] forests provide a wide variety of ecological, economic and social services, including the conservation of biological diversity, carbon stores, soil and water conservation, provision of employment and enhanced livelihood, enhancement of agricultural productivity and improvement of urban and pre-urban living conditions. These services are modestly visible, others are long-term nature and take their full sense only in the perspective of intergenerational equity. These services are at risk where they are most needed, special in the fragile ecosystem which characterizes many underdeveloping countries and in the developing country however this forest function and service are being continuously

affected forest by deforestation and degradation which resulted in soil erosion and degradation of agricultural land the decline overall stability and productivity of the country natural resources is result of complex and inter lettered series of processes that were triggered by the loss of forest cover critical watershed.

The topographic variation, altitude and topographic location, varying agro climatic zone enable Ethiopia to rich in forest diversity. This variation of agro climatic zone enables the country to contain more than 6000 different flowering plants in Ethiopia. Out of the different flowering plants about 12% are probably endemic plant in Ethiopia these endemic plants are found in the natural forest which has covered about 35% of the total land of the country. However, in a current day the forest coverage has shrunken an area of only 2.5 percent total land size of the country. According to [8] within 15 years or 1990 to 2005 interval Ethiopia had loss 3.6 percent of its forest and woodland area due to fire wood collection, expansion of agricultural land, over grazing and exploitation of forest resource, for building materials as the result Ethiopia will face to a difficult future, because the agricultural sector which holds the backbone of economy is mostly depend on forest resources.

The Ethiopia forestry action plan outlines the pattern of deforestation. The current rate of deforestation is cogitated at 150,000 hectares per year (Ethiopian forestry action plan) or 62000 hector per year. The natural high forest of Ethiopia has been degraded by human impact since centuries. Historical source indicate that 35% hectare of Ethiopian land was covered by natural forest of the countries area was covered by natural high forest [5]. The natural upper forest limits general lies between 3200 and 3500 M.A.S.L in the western low land, along the border to Sudan. One could once find large area of low land rain forest, the fauna and flora Ethiopians forest formations are unique in the world due to a large number of endemic plant species up to now, no reliable data in the qualitative aspect, the quantitative aspect extend and the dynamics of the forest degradation was a viable in Ethiopia.

This deficit leads to the motivation install a forest information system (FIS) at the natural resource management and regulatory department of the ministry of agriculture based on malty temporal remote sensing data, the FIS then served for change detection analysis of Ethiopia natural forest resources. The result of the analysis are alarming and prove that within the last 25 years vast

area, which were then stocked by natural fright forest have been degraded or completely deforested. Forest is cleared by the society for varies of purposes. Among them, the major is to provide fuel wood for domestic purposes, to provide sawn wood and timber for construction proposes and the need for agricultural land expansion. The demand for consumption of forest products increased with increasing of population size. Deforestation leads to various environmental impacts such as land degradation, increase soil erosion, loss productivity, imbalance rain falls pattern and ecological imbalance.

### Objectives

- To review the impacts of forest destruction on biodiversity
- To identify the major cause of forest destruction in Ethiopia

### Definition of deforestation

Deforestation defined broadly can include not only conversion to non-forest, but also degradation that reduces forest quality, density and structure of the trees, the ecological services supplied, the biomass of plants and animals, the species diversity and the genetic diversity [8]. United Nations Research Institute for Social development (UNRISD) also defines deforestation as the loss or continual degradation of forest habitat primarily due to human related causes. Agricultural, Urban sprawl, unsustainable forestry practices and mining all contribute to human caused deforestation. In this case the term deforestation used to refer to activities that use the forest, such as fuel wood cutting, commercial logging, as well as activities that cause temporary removal of forest cover such as the slash and burn technique, a component of some shifting cultivation agricultural system or clear cutting. It also used to describe forest clearing for annual crops and forest loss from over grazing.

According to [16], the causes of deforestation are complex and often differ in each forest and country. It may be difficult to determine the cause of deforestation in a particular forest and noted that there are three schools of thought with regards to the causes of deforestation. One is the Impoverishment school, which believes that the major cause of deforestation is “the growing number of poor”. This school of thought of thought sees smallholders as the principal agents of deforestation. The second school of thought is Neoclassical which believes that the major causes of deforestation are “open-access property rights”. They see various agents as the principal

agents of deforestation. The third school of thought which believes that the major cause of deforestation is that “capitalist investor’s crowd out peasants” is called political-ecology. This school sees capitalist entrepreneurs as the major agents of deforestation.

### Status and management of forest in the global

In most rural parts of in the world forest products were are still are fundamental material in constructing residential houses, office and other buildings and furnish them. this is however a common aspect of life in developing country. The global demand for forest product increase proportional with world population growth almost half of the total wood forest products is consumed as fuel wood and the rest half are consumed in industrial and other construction purpose.

For these developing country forest destruction accounts for 2123 million hectares of (55%) the world forest, which 1850 million hectare are in tropical country. Global forest assessment cited in [9] explain that there is a net annual loss of forest area The 1972 Stockholm conference recognize forest as the largest, most complex and self-perpetuating of all ecosystem emphasized the need for sound land forest use polices and the need for introduction of forest management forest ecosystem play multiply roles at a global as well as provider environmental services and as source of economical useful products. In most rural parts of in the world forest products are still are fundamental material in constructing residential houses, office and other buildings and furnish them. This is however a common aspect of life in developing country. The global demand for forest product increase proportional with world population growth almost half of the total wood forest products is consumed as fuel wood and the rest half are consumed in industrial and other construction purpose.

The same research indicated that nearly all forest loss is occurring in the tropics because increase fuel wood demand and utilization of forest product for construction material such fire wood and timber [15].

It is estimated about 9.4-million-hectare forest were cleared between 1990 and 2000 worldwide at the global at large. Annual forest clearance was estimated 14.6 million hectares as compared to the 5.2 million hectare of afforestation. The same research indicated that nearly all forest loss is occurring in the tropics because increase fuel wood demand and utilization of forest product for construction material such as round wood and timber. This case

leads the forest in computability of rates between deforestation and reforestation [9].

### Deforestation in Ethiopia

Deforestation is caused by what human beings do to the forests and can be accentuated by drought. Generally, deforestation occurs when people clear forest for their personal need such as, for fuel, hunting, when they need the land to grow and harvest crops, for building houses, and at times because of religion beliefs. The main causes of deforestation in Ethiopia are shifting agriculture, livestock production and fuel wood in drier areas. Ethiopia is a country in Eastern Africa; it has the second largest population in Africa and has been hit by famine many times because there was a shortage of rain, and a depletion of natural resources. Growing populations are increasing forest degradation which is leading the country to famine. As the population continue to grow the need of the people increase. And the country has lost 98% of its forested regions in the last 50 years.

Forests in Ethiopia play a big role in protecting erosion, because if there are more trees the water wouldn’t be able to wash away the soil. Trees also help to keep water in the soil and reduce global warming by uptake of carbon dioxide. Because there are not enough trees, the Blue Nile is carrying all the soil and other nutrients in the water to the neighboring countries of the Sudan and Egypt, where their land is very fertile.

Historically forests have been any important for the people of Ethiopia for their livelihood even more than now. People used trees to cook their food, to build their traditional homes. They also made traditional medicines from trees and other forests plants. Forests were also important in Ethiopia religious beliefs, believed in holy spirits in the forest that they treat the same as human beings.

At the beginning of the 20th C around 42 million hectares or 35% of Ethiopia’s land was covered by trees, but recent research indicates that forest cover is not less than 3 percent because the number of the population growth fast and the need is growing plus people don’t have enough knowledge about the benefits of trees.

Ethiopia which is a country badly affected by deforestation and forest degradation loses 141,000 hectares of natural forest each year for many reasons. If the number continues to grow the future of the country will be very bad. Currently, the total number of the country land covered by forest is 13,000,000 ha of land [13]. Be-

tween 1990 and 2005 the country actually lost 14 percent of its forest or 2.1 million hectares, and that indicate us deforestation increased by 10.4 percent from 1990-2005, therefore because of deforestation the number of wild animals the country has is becoming less and less overtime. Previously the country has around 6,603 species of plants, 839 birds, 205 mammals 288 reptiles and 76 amphibians as well [13].

### Population growth and deforestation

In Ethiopia there is a growing understanding that deforestation and land degradation will further exacerbate poverty, which brings natural resource conservation to the forefront of rural development initiatives. Forests of the mountainous landscapes of Ethiopian highlands were characterized by high woody plant species diversity. However, these rich forest resources are highly declined due to rapid and continuous deforestation activities. Changes in land use mainly through the conversion of natural vegetation to agricultural lands and settlement are the main causes for this rapid deterioration of forest areas in the country [17].

### Population growth

According to [11] the rapid population growth with limited alternative livelihood options increase pressure on fragile land resources. Average Annual rate of population growth in the horn of African country is very high compared to developed country for example 2011 Ethiopian population grew by 3.2 percent while Norway developed country population grew only 0.3 percent may be un planned or un wanted [10] high rate of fertility amongst subsistence farmers and the associated increase in population density result in the further sub division of family plot, there by placing increased pressure on the agricultural production and deforestation [2]. Rapid population growth has increased continues cropping and shorter halo periods, which in term have resulted in land degradation, fragmentation and deforestation.

Concern with population pressures is ubiquitous in literature on forest degradation, soil degradation, loss of biodiversity, threats to future peace and stability, food scarcities, global warming and underdevelopment. Many scholars focus on overpopulation when they analyze resource use [1]. According to Wilson, “the raging monster upon the land is population growth. In its presence, sustainability is but a fragile theoretical construct”. A policy document

from the World Bank affirms that “the causes of environmental degradation are as varied as its manifestations. But, the heart of the problem is the rapid rate of population growth in many developing countries”.

### Deforestation and land degradation in horn of Africa country

According to [8] in the Horn of Africa the rate of Affirmation is very Negligible in light of Affirmation is very Negligible in light of the very high rate of forest clearing for proposes such as expanding agricultural land, household energy consumption and construction deforestation in appropriate agricultural practice and over grazing have been major cause of land degradation and desertification. For poor and vulnerable households forest product selling like charcoal are the bases of livelihoods diversification and food shortage coping strategies.

In the Horn Africa a poor households have more children than rich households. Survey conducted by Foots should the in poor households have three times more children than the rich households and high fertility of the poor households for example in Djibouti 15% the rural population depends on charcoal as a main income [14].

In the region, to access to electricity is very low thus charcoal provide the household with energy and considerable amount of the household income. However in efficient an intensive production of charcoal is a burden to the society and existing forest resources which result sever environmental problems. For instance, Ethiopia has lost an average of 140900 hectares’ forest cover per year. Deforestation changes the country into arid [3]. In Somalia export of charcoal to the Gulf States has become a big business and intensified charcoal production by using butterfly powered chain saw, for cutting of the forest Magadishu, Kismayo and Basaso [12].

### Low agricultural productivity

According to [8] crop yield in the Horn of Africa are among the lowest in the world. In the region crop yield are below global levels except for cassava, Beans, coffee and tea. E.g. Productivity of Maize production in Eritrea has experienced large decline over the last decades and this leads for search of fertile land from forest areas [15].

Soil fertility depletion is the root cause of declining per capita food production and it has a large contribution to house hold food in security in the region.

### Deforestation and loss of biodiversity in Ethiopia

The National Biodiversity and action plan indicate that Natural Resources calamity, unsustainable agricultural practice, habitat destruction, valuable aromatic plants are being lost as a result of deforestation. For instance, are *Boswellia* species which are sources of incenses (Etan) are chopped and used for charcoal production [6].

### Impact of deforestation on the environment

#### Deforestation as a process

Deforestation is the major problem by which Ethiopia is facing. At the current rate of about 150,000 to 200,000 hectares per year, it threatens to eliminate the remaining natural forest within a period of thirty years. Deforestation had caused and continuous to cause environmental degradation, which involves land degradation, water resources degradation and loss of biodiversity. Tropical forests are declining rapidly owing to forest degradation through fuel wood collection, charcoal production and logging and other factors such as conversion to arable land. Between 30 and 40 percent's of the world's population depends on fuel wood for cooking and warmth as cash is not available for purchasing fossils fuels. Consequently, fuel wood and charcoal production alone account for about half of all wood consumption being 96% for Ethiopia in 1980.

According to [14] quite a large amount of forest of Ethiopia is being wasted through agricultural purposes or wasted through un improved logging and charcoal production. As a result, that about 60,000 ha/year of acacia woodland were being cleared for charcoal production. These have a various consequence on various ecosystems in the country.

The over increasing population growth with increasing demand for fuel wood, construction materials and charcoal, for more cultivated land and lack of appropriate forest policy are the major driving force for the high rate of deforestation and forest degradation in the country.

Though agricultural expansion partly contributes to deforestation, it is the demand for fuel that will be damaging to forests. Hence, substitute for energy should be brought immediately [14].

### Land degradation

Land degradation – a decline in quality and productivity of land and its components may result from wind and water erosion, chemical and physical deterioration along with forest degradation. The over exploitation of forests and the resulting deforestation are responsible for several soil degradation constituting about 56 mill. ha/year worldwide. Erosion, the leading agent of land degradation, is 81 percent human induced through forest degradation in Oromia region [12]. The situation has pressure on the highlands of the region (Hararghe highlands, East and North Shoa, etc...) in response to increased demands for forests for construction and fuel and partly of expanding farmlands to steep and marginal areas (Ibid). Emanating from deforestation and scarcity of fuel, burning cow dung for fuel instead of using it, soil conditions decreased in its fertility, and hence, induced soil degradation with resulting low productivity. This has implications on depletion of natural resources and subsequently reduced quality of life of the people.

The unprecedented scale and rate of human induced changes to forests are threatening forest based biodiversity. The deterioration of forest ecosystems has led to the extinction of some species and the reduction of genetic variation with in other species through the loss or reduction in size of certain population in an area. Ethiopia has unique place in the world as one of the global biodiversity center. It is estimated to possess about 6000 species of higher plant.

Tropical deforestation and forest degradation account for estimated 23% of the green house effect [7].

However, forests source and sink of CO<sub>2</sub>, can contribute to and mitigate climate change. The world's forests now days estimated to be net source of CO<sub>2</sub>, primarily due to deforestation and forest degradation in the tropics. The increasing consumption of forests for fuel wood and charcoal substantially contributes to the global warming. The resulting climatic change has been determined to have enormous impact on food production.

### Conclusion

Among many developing African countries Ethiopia is one of the countries with large population growth which impose high pressures on natural forests and lead being cleared at high rates for the purpose of fuel wood, construction material, charcoal production agricultural land expansion Within past few decades about half of Ethiopia land mass is believed to have been covered with forest. However, with in last 50 years, almost the large amount of forest

has been cleared living a pieces of forest area which is less than 3% as a recent study indicate annual forest clearing in Ethiopia from 1990-2000 or within ten years in Ethiopia. Annual deforestation rate is 8% it, indicate that deforestation rate of Ethiopia forest is higher than the world deforestation rate. The destruction of forest in the Ethiopia lead to many adverse effect on environmental and socio economic conditions among the negative impacts are soil erosion, siltation of streams, river and gully formation. Shortage of forest product such as: fuel wood, construction material and fodder. The loss of biodiversity, degradation of watershed or different catchment area distraction of wild life habitat and fragmentation of the forest ecosystem are accelerated in the study area. The flooding hazards are the main problem in study area.

Generally, lacks of awareness of local community regarding forest conservation and its use at larger scale were the main problems identified. Low use of agricultural production technology, free grazing of livestock, the weakness of implementation of environmental protection policy, low production of cash crop and low concept or vision of the environment protection of the community are lead the study area forest to endangered and faced the rural society to different above mentioned problems.

### Bibliography

1. Abevnathy V. Popiticsthe choices that our future New York Adrian. Ws 92009). "The extent and economic Benefit of Deforestation in Southwest Ethiopia preliminary Analysis" (1993).
2. Anna R. "Production growth and food security in the horn of Africa. Think Africa press (2011).
3. Butler RA. "Tropical rainforest conservation. Mongababy (2011).
4. Constable M. "Ethiopia highland reclamation study development strategy working pepper" 24 MOA (1985).
5. EFAP. "Ethiopian Forestry action program final report, Ministry of natural Resources Development and environmental protection Addis Ababa Ethiopia (1994).
6. Fassil Itana. "National Biodiversity strategic and action plan Addis Ababa Et (2005).
7. FAO. "Natural resource and the human for food and agriculture in Africa Rome (1999).
8. FAO. "Global Forest Resources Assessment 2005, FAO Forester (2005).
9. FAO. "Forester Outlook study of Africa. Africa development Bank European commission and the food and agricultural organization of the united national Rome (2003).
10. Fotso Fean. "The African population and health Research center, Kenya oral evidence to the group (2006).
11. Habtamu Alem Terfe. "Peoples in cries the course in the horn of Africa Norulay agricultural economics research institute (2012).
12. IRIR. "Focus on charcoal Human News and Analysis. IRIN, Hay (2007).
13. Meffe G., *et al.* "Human population control the missing agenda conservation (1993).
14. OCHA. Horn of Africa drought crisis, situation report, No (2011).
15. Omamo sul., *et al.* "Strateric priorites for agricultural development eastern Vs central Africa". IFPRI report 150 IFPRI Washington D.C USA (2006).
16. Williams, M. "Deforestation the earth from prehistory to Global crisis" (2006).
17. Yemiru T. "Participatory Forest Management for Sustainable Livelihoods in the Bale Mountains, Southern Ethiopia Faculty of Forestry Department of Forest Products Uppsala Doctoral Thesis Swedish University of Agricultural Science (2011).