

# Cause, Impact and Remedy of Deforestation in Ethiopia

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**ABSTRACT:** *Ethiopia is an agricultural nation in the Dallol Depression with a wide topographical range from 110 m below sea level to 4620 m above sea level at Mount Ras Dashed. Ethiopia has varying climate conditions and the resulting complex habitats because of its topographical variation and position in the tropics. The nation is also well endowed with natural resources. Deforestation, however, has been continuing for the last five decades. Forests that were over 40 percent of the landmass of the world at the beginning of the 20th century were reduced in 2000 to 2.36 percent. Agricultural expansion is the main cause; growing demand for building materials, industrial use, fuel wood and charcoal; lack of forest protection and conservation policy; lack of a good forest management system capable of stopping the rapidly increasing rate of deforestation; lack of effort to ensure community engagement in forest protection and conservation; and lack of effort to ensure community participation in forest protection and conservation. The remaining forests are mainly located in South Western Ethiopia. In northern highlands, one couldn't find forests except old-aged Afromontane forests around the churches and in some inaccessible areas. However, other areas have been completely destroyed and converted to farms and grazing lands.*

**KEYWORDS:** *Causes, Deforestation, Ethiopia, Impacts, Remedy, Climate, Environment.*

## INTRODUCTION

Forestry may play a significant role in economic growth in an agrarian society like Ethiopia. As a percentage of the entire economy and in comparison to agriculture, the forestry GDP has been very low. From 1971 to 1985, the proportion of forestry in the GDP ranged between 2 percent and 2.6 percent and decreased to 1.9 percent between 1986 and 1987. During 1971-1985, the proportion of forestry in the agricultural GDP ranged between 3.8 percent and 4.8 percent and decreased to 3.7 percent in 1986 and 1987. If the estimate takes into account the direct use of resources such as fuel wood and charcoal and the indirect contribution of forests to the management of watersheds and soil protection, as well as that of forest products used in other manufacturing and building activities, the contribution of forestry to the overall GDP and agricultural GDP would be much higher at about 10 percent [1]. Rapid population growth is the main cause of deforestation, leading to an increase in demand for crops and grazing land, wood for fuel, and building. Lack of viable land use policy and corresponding law also aggravated the rate of deforestation. New settlements in forests are increasing from time to time and hence resulted in the conversion of forested land into agricultural and other land use systems. At present, the few remaining high forests are threatened by pressure from investors who are converting the moist evergreen mountain forests into other land use systems such as coffee and tea plantations [2].

## IMPACTS OF DEFORESTATION

Deforestation is underway and is shaping Ethiopia's climate and geography. Deforestation leads to global climate change and is also cited as one of the key causes of the increased impact of greenhouses. Around 20 percent of the world's greenhouse gas emissions are caused by tropical deforestation. Deforestation is responsible for up to one-third of the global emissions of anthropogenic carbon dioxide, mostly in tropical areas. During the photosynthesis process, trees and other plants extract carbon in the form of carbon dioxide from the atmosphere and release oxygen during natural respiration back into the atmosphere. A tree or forest may only remove carbon over an annual or longer period while actively growing. Most of this accumulated carbon is emitted back into the atmosphere by both wood decay and combustion [3]. The wood must be processed and converted into long-lived goods in order for forests to consume carbon, and trees must be replanted. Forests are carbon stores and, depending on environmental factors, they may be either sinks or sources. Between being net sinks and net carbon dioxide sources, mature forests alternate.

### *Atmospheric Impact*

Reducing emissions from tropical deforestation and forest destruction (REDD) has emerged as a new opportunity for developing countries to supplement existing climate policies. The principle is to provide financial compensation for reducing emissions of greenhouse gases (GHGs) from deforestation and forest destruction. Ethiopian rain forests are commonly believed by laymen to contribute a large amount of oxygen to the earth, although scientists now agree that rainforests contribute little net oxygen to the atmosphere and that deforestation would have little impact on the levels of oxygen in the atmosphere. However, the incineration and burning of forest plants releases tones of CO<sub>2</sub> that lead to global warming in order to clear ground. Forests are also capable of removing carbon dioxide and airborne toxins, thus contributing to the stability of the biosphere [4].

### *Soil Impact*

There are very low soil loss rates in undisturbed forests, about two metric tons per square kilometer. By increasing the amount of runoff and reducing the protection of the soil from tree litter, deforestation typically increases rates of soil erosion. In the excessively leached tropical rain forest soils in which Ethiopia is part of the tropics, this may be a benefit. Thousands of years ago, the Ethiopian Plateau was covered with forest. It has since been eroding, forming dramatic incised valleys, and supplying the sediment that causes the lower reaches of the river to flood. Tree roots bind soil together, and if the soil is sufficiently shallow they act to keep the soil in place by also binding with underlying bedrock. Tree removal on steep slopes with shallow soil thus increases the risk of landslides, which can threaten people living nearby. However most deforestation only affects the trunks of trees, allowing for the roots to stay rooted, negating the landslide [5].

### *Ecological Impact*

Deforestation results in biodiversity declines. A degraded ecosystem with decreased biodiversity has resulted in the loss or degradation of areas of forest cover. Forests encourage biodiversity and provide wildlife habitat; forests also promote the protection of medicine. Deforestation will irretrievably kill genetic variants, with forest biotopes becoming an irreplaceable source of new drugs. Although the most complex habitats on Earth are tropical rainforests and approximately 80% of the world's documented biodiversity can be found in tropical rainforests, the loss or degradation of important areas of forest cover has led to a degraded climate with decreased biodiversity [6].

## **DIFFERENT REMEDIES**

### *Development of improved stoves*

For developing countries, such as Ethiopia, whose populations rely primarily on biomass fuels such as wood, charcoal, dung and agricultural residues, technological advances in energy efficiency are important. Land resources are exhausted by overuse of these fuels. A specific cooking method (Injera baking) in Ethiopia needs the bulk of the domestic energy demand emanating from the forest. This Injera baking is carried out using an open fire / three stone/ method in most of the country's households. This technique is inefficient and unsustainable, as it is established. Since the early 1990s, several attempts have been and are being made by the government and non-government organizations to resolve this issue [7]. One of the outcomes of these efforts in the country is the creation of the 'Mirt' biomass Injure stove. This stove is being highly promoted these days because, compared to the open fire method, it can achieve fuel efficiency of up to 50 percent. Another Lak'ech ('good', 'good') enhanced charcoal stove was established in 1991. In Addis Abeba, commercial development of Lak'ech (improved charcoal stove) was started in early 1992. To date, millions

of these improved stoves are in operation, saving more than 25 percent of the conventional stove's charcoal. This has resulted in hundreds of hectares of Ethiopia's ecologically and economically significant dry land forest being protected [8].

#### *Area closure and soil and water conservation*

At many levels, attempts have been made to control the deforestation problem. Soil and water management work and the creation of area closures aimed at rehabilitating forest land have been two of the key activities for a community-based approach. The development of area closures was a significant collection of activities. Area closures can be described in the Ethiopian context, as degraded land for restoration has been excluded from human and livestock intervention [9]. In practice, human and animal intervention in the closure of the area is limited in order to facilitate natural regeneration. In reality, however, in some of the zone closures, cattle are permitted to graze freely. Soil and water management programmers are also being conducted in some regions. Area closures started in the early 1980s, coinciding with the beginning of Ethiopia's large-scale land regeneration and soil and water conservation programmers. One of the strategies for the restoration of degraded hillsides within catchments delimited for rehabilitation and soil and water conservation programmers has been the establishment of area closures [10].

### CONCLUSION & DISCUSSION

In the conservation of an ecosystem that promotes sustainable growth, forests play an indispensable role. Forests are instrumental in managing soil erosion, land loss and desertification, aside from their short to long-term beneficial impact on weather and climate conditions, issues that seem to have reached their climax in Ethiopia. High population growth, low agricultural productivity, poor economic efficiency, shifting agriculture, livestock production, and fuel in drier areas are the key causes of deforestation in Ethiopia. Deforestation leads to global climate change and is also cited as one of the key causes of the increased impact of greenhouses. Furthermore, diminishing forest cover reduces the ability of the ecosystem to intercept, hold and transpire precipitation. Deforested areas become sources of surface water runoff, which travels much faster than subsurface flows and then erodes the productive portion of the soil, instead of trapping moisture that then percolates to groundwater systems. Many attempts have been and are being made by the government and non-governmental organizations to reduce the deforestation crisis. The primary remedial steps taken are the production of improved stoves, area closures and plantations. Currently, while there are some attempts by communities or organizations, there is, in general, a lack of propensity to plan, organize and execute sustainable forestry programmers nationally, considering the growing problems of environmental degradation and fuel shortages that have a serious effect on local communities and the national economy in particular.

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