The Science Probe *Vol. 2 No. 1 (February 2014) Page No-39-54* *ISSN: 2277 – 9566*

DEFORESTATION AND ECONOMIC DEVELOPMENT: A COMPARATIVE STUDY

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ABSTRACT

This article attempts to highlight the effects of deforestation on economy of any country. The results indicate that deforestation is a global problem. It is evident from the study that Amazon rainforest and central African rainforest are more renown for gloomy forest. These areas are consuming large quantity of greenhouse gases. Deforestation is increasing rapidly in Amazon and central African rainforest. Population explosion, agriculture, urbanization & industry are the main reasons behind it. It affects natural water cycle and weather of the nation. Thus, the paper suggests that government should take initiatives for preventing deforestation.

KEYWORDS: *Deforestation, Amazon, Central Africa*

INTRODUCTION

Humans are the only living species in the *Homo* genus. Anatomically modern humans originated in Africa about 200,000 years ago, reaching full behavioral modernity around 50,000 years ago. Human livelihood and atmosphere are interconnected. The earth is believed to be 4.6 billion years old. The development of building blocks laid the foundations of emergence of early life. The oldest undisputed fossils are believed be about 3.5 billion years old. Live is keeps on changing evolution. Evolution is an inevitable process because of inheritance, genetic variations, and competition between species. Climate is influenced by a variety of factors, both human-induced and natural. Human livelihood cannot sustain without water. Water is a chemical substance with the chemical formula H_2O. A water molecule contains one oxygen and two hydrogen atoms connected by covalent bonds. Water covers 70.9% of the Earth's surface, and is vital for all known forms of life. On Earth, 96.5% of the planet's water is found in oceans, 1.7% in groundwater, 1.7% in glaciers and the ice caps of Antarctica and Greenland, a small fraction in other large water bodies, and 0.001% in the air as vapor, clouds, and precipitation. Safe drinking water is essential to humans and other life forms. Access to safe drinking water has improved over the last decades in almost every part of the world, but approximately one billion people still lack access to safe water and over 2.5 billion lack accesses to adequate sanitation

WHAT IS DEFORESTATION?

Deforestation is the removal of a forest or stand of trees where the land is thereafter converted to a no forest use. Examples of deforestation include conversion of forestland to farms, ranches, or urban use. The growing global concern for conservation of the world's natural resources has resulted in the formulation of long-term perspective plans for conserving forests. These forests facilitate the conservation of ecological balances, biodiversity, enhance the quality of environment by checking soil erosion, water retention and conservation, regulate water cycle, act as a carbon sink which balances the carbon dioxide and oxygen in the atmosphere and facilitate in reduction of the greenhouse gases effect, etc.

The main objectives of the article are

1. To identify the trend of deforestation in Central Africa and Amazon basin, &
2. Evolutes its effects on the economy of that areas.

DEFORESTATION: GLOBAL PERSPECTIVE

Deforestation by region considers the rates and causes of deforestation vary from region to region around the world. In 2009 2/3 of the world forests were in 10 top countries: 1) Russia, 2) Brazil, 3) Canada, 4) United States, 5) China, 6) Australia, 7) Congo, 8) Indonesia, 9) Peru and 10) India. Deforestation is a complex problem. A recent study by the Food and Agriculture Organization (FAO) reported that during the decade from 1980 to 1990, the world's tropical forests were reduced by an average of 15.4 million hectares per year (0.8 percent annual rate of deforestation). The area of land cleared during the decade is equivalent to nearly three times the size of France. World annual deforestation is estimated as 13.7 million hectares a year, equal to the area of Greece. Only half of this area is compensated by new forests or forest

growth. In addition to directly human-induced deforestation, the growing forests have also been affected by climate change, increasing risks of storms, and diseases. Kyoto protocol includes the agreement to prevent deforestation but not the actions to fulfill it.

AMAZON RAINFOREST

The Amazon is the planet's largest remaining rainforest, teeming with more wildlife than anywhere else on Earth. But this majestic rainforest is caught between the twin destructive forces of deforestation and climate change. The Amazon is a vast and majestic rainforest teeming with an estimated quarter of all known land species. The jaguar, the pink river dolphin, the sloth, the world's largest flower, a monkey the size of a toothbrush and a spider the size of a baseball are just a few of the species that are know about - there are many more yet to be discovered. It is also home to over 20 million people including hundreds of indigenous peoples, some of which have never been contacted by the *'outside world'*. The Amazon stores 80 to 120 billion tons of carbon, helping to stabilize the planet's climate. The Amazon River Basin is home to the largest rainforest on Earth. The basin roughly the size of the forty-eight contiguous United States covers some 40% of the South American continent and includes parts of eight South American countries: Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, and Suriname, as well as French Guiana, a department of France. Today the Amazon River is the most voluminous river on Earth, eleven times the volume of the Mississippi, and drains an area equivalent in size to the United States. During the high water season, the river's mouth may be 300 miles wide and every day up to 500 billion cubic feet of water (5,787,037 cubic feet/sec) flow into the Atlantic.

Deforestation in South America has become a major problem though the continent maintains a high percentage of the earth's ecosystem. The growing degradation is alarming. The forests including the biggest tropical rain forest, Amazon rain forest are being deforested. This a growing threat to the wildlife. Deforestation in South America is taking place due to the expansion of agriculture for economic development. Expansion of industry, logging, mining, cattle pastures are also responsible for this. The effects are however different in different areas starting from degradation of land to soil erosion and also the earth's biodiversity. The Amazon rain forest is the most biodiversity tropical rain forest. It is the home of different species of plants and animals. People also use the land here for plantation. They use pesticides and irrigation system that are harmful to the land. The chemicals also kill animals. The rain washes it into water only to kill the fishes and other species. Water balance is also hampered. Deforestation in Amazon Rain Forest leads to destruction of human life itself.

Fig 1: Amazon Rain Forest

The Amazon Rainforest is a moist broadleaf forest that covers most of the Amazon Basin of South America. This basin encompasses seven million square kilometers (1.7 billion acres), of which five and a half million square kilometers (1.4 billion acres) are covered by the rainforest. This region includes territory belonging to nine nations. The majority of the forest is contained within Brazil, with 60% of the rainforest, followed by Peru with 13%, Colombia with 10%, and with minor amounts in, Venezuela, Ecuador, Bolivia, Guyana, Suriname and French Guiana. States or departments in four nations contain *"Amazonas"* in their names. The Amazon represents over half of the planet's remaining rainforests, and it comprises the largest and most species-rich tract of tropical rainforest in the world.

Deforestation occurs for many reasons: trees or derived charcoal are used as, or sold, for fuel or as timber, while cleared land is used as pasture for livestock, plantations of commodities, and settlements. The removal of trees without sufficient reforestation has resulted in damage to habitat, biodiversity loss and aridity. It has adverse impacts on biosequestration of atmospheric carbon dioxide. Deforestation has also been used in war to deprive an enemy of cover for its forces and also vital resources. Deforested regions typically incur significant adverse soil erosion and frequently degrade into wasteland.

The main sources of deforestation in the Amazon Rainforest are human settlement and development of the land in the nine years from 1991 to 2000, the total area of Amazon Rainforest cleared rose from 415,000 to 587,000 km². In 1996, the Amazon was reported to have shown a 34% increase in deforestation since 1992. The mean annual deforestation rate from 2000 to 2005 (22,392 km² per year) was 18% higher than in the previous five years (19,018 km² per year). In Brazil, the Instituto Nacional de Pesquisas Espaciais (INPE or National Institute of Space Research) produces deforestation figures annually. Their deforestation estimates are derived from 100 to 220 images taken during the dry season in the Amazon by the Landsat satellite, also may only consider the loss of the Amazon rainforest biome – not the loss of natural fields or savannah within the rainforest. According to INPE, the original Amazon rainforest biome in Brazil of 4,100,000 km² was reduced to 3,403,000 km² by 2005 – representing a loss of 17.1%. One of the most important causes of deforestation in the Amazon is the cultivation of agricultural commodities such as soya, which is used mainly to feed animals. McDonald's has denied feeding its chickens with soya from the Amazon rainforest supplied by agricultural giant Cargill; however, not only did evidences prove this to be true, but also pointed out the soya farmers were linked to the use of slave laborers, illegal land grabbing and massive deforestation. It has

been calculated that McDonald's and its suppliers are responsible for 70,000 km² of the Amazon's deforestation in the last three years. Greenpeace have demanded that fast food companies eliminate soya trade and any meat products that are associated with the Amazon rainforest. The effects of losing the Amazon on the planet would be on scale simply incomparable to current figures on climate change. The massive levels of carbon dioxide released would cause the planets temperature to rocket causing untold catastrophe.

The principal environmental issues in Peru are water pollution, soil erosion and pollution and deforestation. Peru has the fourth largest area of rainforest in the world, which covers nearly 60% of its territory (70 million hectares) and approximately 250,000 hectares are cut down annually. Unfortunately, the deforestation rate in Peru is 0.35%-0.5%, which is approximately 250,000 hectares cut down annually. Deforestation in Peru is largely a result of subsistence farming resulting from migrant farmers exploiting the squatter's law which allows citizens to get public land if they can prove that they have lived there for 5 years. More deforestation though, is caused by legal and illegal logging, mining, petroleum drilling and road development. About half of Peru is forested. Of this, more than 80 percent is classified as primary forest. Most of this deforestation is the result of subsistence agriculture, which can largely be attributed to the migration of farmers from the highlands taking advantage of Peru's land-tenure law which allows people to own land by occupying it for five years. Deforestation and degradation are also increasingly the result of development activities, especially logging, commercial agriculture, mining, gas and oil operations, and road construction.

Despite its relatively small size, Colombia is the second most biologically diverse country on Earth, home to about 10 percent of the world's species. This biodiversity results from Colombia's varied ecosystems—from the rich tropical rainforest to the coastal cloud forests to the open savannas. Colombia loses 2,000 km^2 of forest annually to deforestation, according to the United Nations in 2003, although some suggest that this figure is as high as 3,000 km² due to illegal logging in the region. Deforestation results mainly from logging for timber, small-scale agricultural ranching, mining, development of energy resources such as hydro-electricity, infrastructure, cocaine production, and farming. Around one-third of the country's original forest has been removed as a result of deforestation. Deforestation in Colombia is mainly targeted at primary rainforest which covers more than 80% of the country. One of the main causes of deforestation in Colombia is the national Plan Pacifico which is intended to raise revenue to develop the economy. The plan includes exploitation of the country's rainforests for the extraction of precious natural resources for exportation. In the highlands, the ongoing battle over coca cultivation has had a significant impact on forest cover. Colombia is a leading producer of coca, the plant that provides the main ingredient of cocaine. Much of Colombia's coca is grown by poor farmers because it generates more income than any other crop. Typically farmers convert the plant into coca paste and sell it to groups—including paramilitaries and Colombian rebels—who refine it into cocaine and export it to markets like the United States, which is the world's largest consumer of the narcotic.

Venezuela has a land area of approximately 890,000 square kilometers, approximately half of which is forested. Almost all of this forested area is located south of the Orinoco

River in the Guayana region, which includes Delta Amacuro, Bolívar and Amazonas states. Venezuela's forests provide an array of economic, social, and ecological services that are of vital importance to the nation's economy and culture. Over 80 percent of the country's indigenous groups live in the forests of the Guayana region. In the last forty years, about 80 percent of Venezuela's estimated deforestation has occurred north of the Orinoco River, where most of the major population centers are located. In the past, urbanization benefited the forests of the Guayana region by concentrating the majority of the nation's people in towns and cities along the northern coast. However, decline in oil prices in the mid- to late-1980s and the recent economic crisis have resulted in increased pressure on the forests. The decline of opportunities in northern cities has led to a mass migration of people into the Guayana region forests to seek new opportunities. In addition, a stronger emphasis has been placed on developing the southern half of the country, particularly for gold and diamond mining. Between 1990 and 2000, Venezuela lost an average of 287,500 hectares of forest per year. The amounts to an average annual deforestation rate of 0.55%. Between 2000 and 2005, the rate of forest change increased by 5.9% to 0.59% per annum. In total, between 1990 and 2005, Venezuela lost 8.3% of its forest cover, or around 4,313,000 hectares. Measuring the total rate of habitat conversion for the 1990-2005 intervals, Venezuela lost 7.5% of its forest and woodland habitat.

Ecuador is a relatively small country (283,560 sq. km.) located on the equator in the tropical Andes of South America. Its territory includes four principal regions: the Amazon, the Andes, the Pacific Coast, and the Galapagos Islands; and is home to at least 14 indigenous nationalities. The eastern half of the country makes up part of the headwaters of the Amazon basin, Earth's largest and most biodiverse watershed and tropical rainforest. Despite its small area, Ecuador is the eighth most biodiverse country on Earth. Ecuador has almost 20,000 species of plants, over 1,500 species of birds, more than 840 species of reptiles and amphibians, and 341 species of mammals. Ecuador also has the distinction of having the highest deforestation rate and worst environmental record in South America. Oil exploration, logging, and road building have had a disastrous impact on Ecuador's primary rainforests, which now cover less than 15 percent of the country's land mass. Logging in Western Ecuador (coastal and low Andean) areas is responsible for the loss of 99 percent of the country's rainforest in this region. Historically, after an area has been selectively logged and abandoned, settlers follow logging roads and set up homesteads, slashing and burning the surrounding forest for agriculture and cattle pasture.

Bolivia has substantial rainforest cover in its lowland areas: the Bolivian Amazon covers 229,985 square miles (59.6 million hectares) of which roughly two-thirds is forested. About half of Bolivia's forest cover consists of primary forest. From 1986-1990, the country had a low deforestation rate—about 0.2 percent annually—due to several factors including the Andean-based government's inattention to the lowland parts of the country, the extreme poverty of the country, and the weak export market of this land-locked country. However, during the 1990s, Bolivia's deforestation rate more than doubled to 270,400 hectares per year. Greater threats to Bolivia's forests come from oil and gas development, commercial agricultural expansion, subsistence agriculture and fuel wood collection, and land-clearing for cattle pasture.

Suriname's extensive forest cover and low population, about 400,000 concentrated in the capital and coastal cities, give it one of the lowest deforestation rates in the world. Only 5 percent of the population lives in the rainforest; this includes indigenous peoples and six tribes of Maroons—descendants of escaped slaves who recreated forest communities centuries ago and today retain their traditional West African style. Conflicts between the coastal population and the natives of the forested interior manifested themselves in a bloody six-year civil war that was resolved in 1992 with the signing of a peace treaty. Under the treaty, the interior and indigenous populations have the right to their indigenous lands and to control economic activity on those lands. According to the U.N. FAO, 94.6% or about 14,758,000 ha of Suriname is forested, according to FAO. Of this 94.9% (14,001,000) is classified as primary forest, the most biodiverse and carbon-dense form of forest. Suriname had 13,000 ha of planted forest. Change in Forest Cover: Between 1990 and 2010, Suriname lost an average of 900 ha or 0.01% per year. In total, between 1990 and 2010, Suriname lost 0.1% of its forest cover or around 18,000 ha. Suriname's forests contain 3,165 million metric tons of carbon in living forest biomass. Biodiversity and Protected Areas: Suriname has some 1104 known species of amphibians, birds, mammals and reptiles according to figures from the World Conservation Monitoring Centre. Of these, 1.3% is endemic, meaning they exist in no other country, and 1.8% is threatened.

The rainforests of French Guiana are still largely unexploited and sparsely populated. The majority of the population lives on the Atlantic coastal zone and is totally dependent on subsidies from France. The European Space Agency is responsible for more than 50 percent of the economic activity. For the immediate future, the forests of French Guiana face relatively few threats, although timber extraction is increasing and a relatively high population growth rate of displaced Lao farmers and other local groups may pressure coastal forest regions with subsistence agriculture. Gold potential in the interior regions is attracting foreign development interest, and there are some concerns over a potential road project.

AFRICAN RAINFOREST

The forests of Africa cover 520 million hectares and constitute more than 17 per cent of the world's forests. They are largely concentrated in the tropical zones of Western and Central, Eastern and Southern Africa. With more than 109 million hectares of forests, Congo Kinshasa alone has more than 20 per cent of the region's forest cover, while Northern Africa has little more than 9%, principally along the coast of the western Mediterranean countries, according to FAO. African forests include dry tropical forests in the Sahel, Eastern and Southern Africa, humid tropical forests in Western and Central Africa montane forests, diverse sub-tropical forest and woodland formations in Northern Africa and the southern tip of the continent, as well as mangroves in the coastal zones.

The vast majority of Africa's tropical moist and tropical rainforests exist in West and Central Africa. Around the turn of the century, West Africa had some 193,000 sq. miles (500,000 sq. km) of coastal rainforest. However, the tropical forests of West Africa, mostly lowland formations easily accessible from the coast, have been largely depleted by commercial exploitation, namely logging, and conversion for

agriculture. In more populous states, notably Nigeria, human population pressures have put a tremendous strain of forests, while other countries like Cote d'Ivoire have suffered extensive forest loss as a result of commercial logging and agriculture. The rainforests of Central Africa still cover a substantial area, although this is rapidly declining. The bulk of this region's remaining forests are found in the Congo Basin in Zaire (Democratic Republic of Congo) and Congo. Recently these forests were increasingly threatened by masses of refugees fleeing rebel forces in the Democratic Republic of Congo (Zaire) and the movement of local militias.

Africa is suffering deforestation at twice the world rate, according to the United Nations Environment Programme (UNEP). Some sources claim that deforestation has already wiped out roughly 90% of West Africa's original forests. Deforestation is accelerating in Central Africa. According to the FAO, Africa lost the highest percentage of tropical forests of any continent during the 1980s, 1990s, and early 2000s. According to the figures from the FAO (1997), only 22.8% of West Africa's moist forests remain, much of this degraded. Nigeria has lost 81% of its old-growth forests in just 15 years (1990–2005). Massive deforestation threatens food security in some African countries. One factor contributing to the continent's high rates of deforestation is the dependence of 90% of its population on wood as fuel for heating and cooking. Deforestation in the Democratic Republic of the Congo has been caused partly by unregulated logging and mining, but mostly by the demands made by the subsistence activities of a poor population. The main cause of deforestation in the East African country of Ethiopia is a growing population and subsequent higher demand for agriculture, livestock production and fuel wood. Deforestation with resulting desertification, water resource degradation and soil loss has affected approximately 94% of Madagascar's previously biologically productive lands. Since the arrival of humans 2000 years ago, Madagascar has lost more than 90% of its original forest.

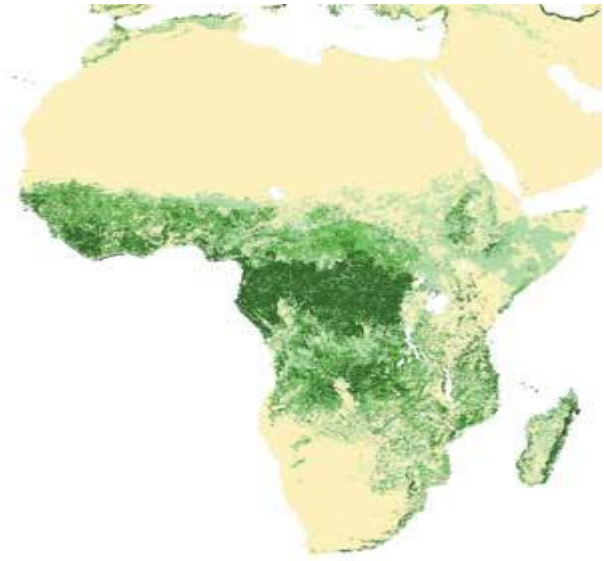

Fig2: African Rainforest

Often taken three decades apart, showed expanding cities, pollution, deforestation and climate change were damaging the African environment despite glimmers of improvement in some areas. Forest loss was a major concern in 35 countries in Africa. It showed that environmental change extended beyond the well-known shrinking of the snows on Mount Kilimanjaro in Tanzania, Africa's highest peak at 5,895 meters (19,340 ft), or the drying up of Lake Chad. On the Ugandan border with Democratic Republic of Congo, for instance, glaciers on the Rwenzori Mountains where the highest peak is 5,109 meters shrank by half between 1987 and 2003.

Deforestation in the rainforests of West Africa reduces rainfall over the rest of the forest. The forests of West Africa and the Congo Basin are the second largest in the world after the Amazon rainforest. They are important not only as a habitat for a vast and diverse ecosystem but also as a carbon sink, removing a large proportion of the CO2 in the Earth's atmosphere and slowing down climate change. For many years deforestation has been occurring widely in Africa, with tree canopies being removed in favour of agriculture, plantations and other non-forest uses. African rainforests already have the lowest rainfall of any rainforest ecosystem on Earth, which could make them particularly sensitive to changes in local weather patterns.

The Congo Rainforest is one of the world's most threatened ecosystems. Commercial logging, clearing for subsistence agriculture and widespread civil strife has devastated forests, displaced forest dwellers, and resulted in the expansion of the *"bushmeat"* trade. Since the 1980s, Africa has had the highest deforestation rates of any region on the globe. Most of the deforestation in the Congo is caused by local subsistence activities by poor farmers and villagers who rely on forest lands for agriculture and fuel wood collection. Slash-and-burn is commonly used for clearing forest. Typically, poor farmers and colonists gains access to forest lands by following logging roads, although in the past few years civil strife has driven many Central Africans deep into the rainforest to escape the widespread violence. Central Africa has been plagued with violence since the mid-90s. Hundreds of thousands of refugees have moved through the forests of the Congo, stripping vegetation and devastating wildlife populations.

Central Africa is steadily giving way to industrial logging. The rapid expansion of the logging frontier in the Congo Basin, including Cameroon, Central African Republic, Equatorial Guinea, Gabon, Republic of Congo and Democratic Republic of Congo. It shows the need to conserve forested landscapes while also sustaining timber production crucial for Central African nations. In Central Africa as a whole, 600,000 square kilometers of forest — 30 per cent — has been conceded for logging, whereas only 12 per cent is protected. The highest densities of logging roads are in Cameroon and Equatorial Guinea, where 15 per cent of the forest has been disturbed. The most rapidly changing area is in northern Republic of Congo, where the rate of road construction roughly quadrupled between 1976–90 and 2000–02. In the Democratic Republic of Congo, which contains 63 per cent of the remaining forest of the region, only one per cent of forest has been disturbed by logging trails and tree-felling.

Frequent droughts and floods in eastern Africa can partly be blamed on widespread deforestation in the region. Environmentalist and Nobel Peace laureate, Wangari Maathai, has estimated that the country needs to conserve at least 10 percent of its indigenous forest cover. The findings of a study carried out by UNEP following the 1999-2000 drought estmated that between 2000 and 2003 the country's main water catchment areas - Mt Kenya Forest, Mau Forest, Mt Elgon Forest, Cherangani Forest - were deforested by between 0.2 and 2 percent over a two-year period.

In summary it can be say that, drivers of deforestation vary from region to region- below are examples of human activity driving the destruction of the world’s natural forests.

1. **Agri-business**- the largest driver of deforestation, in which vast areas of natural forest are burned or cleared in order to raise cattle or grow cash mono crops like palm oil and soy. Palm oil and soy are used in a wide array of products ranging from toothpaste, chocolate, animal feed and cosmetics.

2. **Industrial logging** for timber, pulp and wood fiber to create building materials and consumer products like office paper, tissue, books, magazines and packaging.

3. **Mining** for metals such as gold, copper, or aluminum clears large tracts of natural forests and contaminate forest eco-systems with their runoff.

4. **Road Building** through forests fragments the landscape, endangers wildlife habitat and provides access points for illegal loggers and other business operations that encroach into the forest.

5. **Hydroelectric dams** flood upstream forests, leading to widespread forest loss, habitat degradation and displacement of forest communities and wildlife.

DEFORESTATION AND ECONOMIC EFFECTS

Every minute about fifty acres of rain forest are destroyed and some twenty-five species become extinct. Deforestation is the process of converting forested land into non-forest sites that are ideal for crop raising, urbanization and industrialization. Deforestation is a serious concept and it has serious effects to the surroundings. It has many negative effects on the environment. The most dramatic impact is a loss of habitat for millions of species. Seventy percent of Earth's land animals and plants live in forests, and many cannot survive the deforestation that destroys their homes. Effects of deforestation can be classified and grouped into effects to biodiversity, environment and social settings. Because deforestation basically involves killing trees in forests, there are so many effects that can be enumerated as results of the activity. The consequences of cutting down thousands upon thousands of acres of trees increases as human beings increase in their population, and the long-term results can be devastating as more and more species of animals become endangered and die off.

The local level is where deforestation has the most immediate effect. With forest loss, the local community loses the system that performed valuable but often underappreciated services like ensuring the regular flow of clean water and protecting the community from flood and drought. When forest cover is lost, runoff rapidly flows into streams, elevating river levels and subjecting downstream villages, cities, and agricultural fields to flooding, especially during the rainy season. During the dry season, such areas downstream of deforestation can be prone to months-long droughts which interrupt river navigation, wreak havoc on crops, and disrupt industrial operations. Additionally, the forest adds to local humidity through transpiration, and thus adds to local rainfall. In the water cycle, moisture is transpired and evaporated into the atmosphere, forming rain clouds before being precipitated as rain back onto the forest. When the forests are cut down, less moisture is evapotranspired into the atmosphere resulting in the formation of fewer rain clouds. Subsequently there is a decline in rainfall, subjecting the area to

drought. If rains stop falling, within a few years the area can become arid with the strong tropical sun baking down on the scrub-land.

Locally, the effects of deforestation play both dramatic and subtle roles. The plentiful biodiversity that makes the region so unique also acts against the rainforest as more and more of it disappears. Disappearance of vegetation creates ripple effects in the food chains and nutrient networks; species that normally have dwelled within one region of the forest are pushed to another simply via the search for food. This, of course, only applies if the organisms' food supply exists elsewhere in the forest. If this is not the case, the population may face extinction due to lack of nourishment. Even if the organisms are able to adapt to their new territory, they now place an unbalancing pressure on the region. The deforestation effect in the Amazon is strong, with reductions in precipitation, evapotranspiration, and cloudiness.

Deforestation causes increases in erosion and flooding. The land of the Amazon Rainforest is naturally nutrient-deficient because most of the nutrients are stored within the aboveground biomass of the vegetation. Tree root systems hold the soil together to slow the rate of flooding and reduce erosion. Trees themselves also absorb water during the rainy season. When the trees are removed from the environment, the rainy season can have devastating effects. Rains wash away the vital topsoil and what nutrients are left. Increased deforestation therefore leads to decreased biodiversity and species richness.

The indigenous people, whose home and way of life is turned upside down by the arrival of the lumber lorries, will feel much of the effects of deforestation. They survive by living in harmony with the forest and its inhabitants but are often forced to leave or change their way of living in order to survive. This displacement of people and the consequent loss of that culture make the human race a little poorer. Those that live on the edges of the forest are also affected, as they can no longer gather resources from it for themselves.

Global warming is one of the biggest symptoms for the earth to get destroyed in some years. It is the effect of the green house effect. Green house effect is nothing but the occupation of carbon dioxide in the maximum amount of the total percentage of the atmospheric air. The deforestation increases the amount of the carbon dioxide and decreases the amount of the oxygen in the air. The carbon dioxide makes the earth heat and the reaction of this carbon dioxide with the oxygen molecules of the ozone layer that has been protecting the earth from the ultra violet rays of the sun. So the ozone layer is with a big hole now and the danger for the earth to be flooded in some days by the water created if the ice bars are melted with the hot ultra violet rays of sun one day. One of the reasons for this situation of the earth is the deforestation.

Trees contribute in a large way in maintaining the water cycle. They draw up water via their roots, which are then released into the atmosphere. A large part of the water that circulates in the ecosystem of rainforests, for instance, remains inside the plants. When these trees are cut down it results in the climate getting drier in that area. The groundwater tables are affected and soon get depleted. The trees help in prevention of running off of water and help the soil absorb the flowing water. When there are no trees, water just runs off, leaving no chance for the groundwater tables to absorb more water. One of the major

effects of deforestation is loss of biodiversity. Trees and forested areas can provide food and habitats to an enormous amount of plant and animal life. Any basic tree can provide high branches for birds, vegetation for insects and animals to eat, shelter for shade-plants and burrows for animals such as squirrels and foxes, as well as beneficial nutrients for the soil.

Deforestation also affects indigenous people, both physically and culturally. Because many indigenous people actually have no legal rights to the land on which they live, governments that want to use the forest for profit can actually *"evict"* them. As these populations leave the rainforest, they also leave their culture behind. Mining activity not only destroys trees with clearings and roads for the mines, it also pollutes rivers and water tables with heavy metal toxins that are almost impossible to remove. Rainforest areas downstream of mines can be affected for hundreds of miles. These toxins - often mercury-based compounds - not only kill animals and plants, they can affect the microorganisms as well.

There is a growing concern about the impacts of climate change on the stability of ecological processes in Amazonia, the resulting feedbacks from the local to the global circulation system and the ensuing consequences on plant, animal and human populations. The future path of deforestation depends on human decisions. It is not foreordained that the Amazon forest will be destroyed, although this is obviously the endpoint if present trends continue unchanged. Various modeling efforts have projected clearing patterns in Amazonia and agree that vast areas would be cleared if trends continue and planned infrastructure projects are built.

The healthy forest restoration act of 2003 was passed by President Bush. This law helps prevent needless destruction of forests. In June of 2003, two U.S. representatives (Jay Inslee), Sherwood Boehlert re-introduced a law called the National Forest Road less Area Conservation Act . This law protects forests from mining, drilling or logging. In 1989 there was a petition sent to the UN to stop deforestation. This petition had 3 million signatures. This was made by the World Rainforest Movement. It was put down by the UN. The Brazilian army has joined forces with the environmental ministry to stop or at least slow down illegal deforestation in the Amazon. There will be many road blocks put in to stop some machinery. Also 100 soldiers and 20 helicopters will be used to help move around the environment agents.

There are several continuing examples of many such small communities; taking self propelled initiatives outside the formal structures of law and governance to protect their forests. In their endeavor to safeguard their environment and protect their forests they are often in direct conflict with powerful political and economic structures which are themselves driven by major vested.

CONCLUSION

Deforestation is a global problem. More and less every country is facing this problem. Amazon and central African rainforest are the most well-known forest areas. In Amazon rainforest area falls in eight South American countries like as Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, and Suriname, as well as French Guiana. . The majority of the forest is contained within Brazil, with 60% of the

rainforest, followed by Peru with 13%, & Colombia with 10%. Deforestation in South America has become a major problem though the continent maintains a high percentage of the earth's ecosystem. Deforestation in South America is taking place due to the expansion of agriculture for economic development. Expansion of industry, logging, mining, cattle pastures are also responsible for this.

The vast majority of Africa's tropical moist and tropical rainforests exist in West and Central Africa. The rainforests of Central Africa still cover a substantial area, although this is rapidly declining. The bulk of this region's remaining forests are found in the Congo Basin in Zaire (Democratic Republic of Congo) and Congo. The forests of West Africa and the Congo Basin are the second largest in the world after the Amazon rainforest. The rapid expansion of the logging frontier in the Congo Basin, including Cameroon, Central African Republic, Equatorial Guinea, Gabon, Republic of Congo and Democratic Republic of Congo. The Congo Rainforest is one of the world's most threatened ecosystems.

Deforestation is a serious concept and it has serious effects to the surroundings. The most dramatic impact is a loss of habitat for millions of species. When forest cover is lost, runoff rapidly flows into streams, elevating river levels and subjecting downstream villages, cities, and agricultural fields to flooding, especially during the rainy season. It will reduce rainfall which will badly affects agriculture and drinking water sources. For lack of agricultural raw material industrial production will be hampering. Livelihood of rural people will be change. Migration and urban slum problem will be increase. Economy of various countries will be affected.

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