

## **APPRAISAL OF THE CAUSES AND CONSEQUENCES OF HUMAN INDUCED DEFORESTATION IN EKITI STATE, NIGERIA**

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### **ABSTRACT**

Deforestation is a serious environmental problem in Ekiti State, Nigeria. To this end, this study investigates the causes, consequences and remedial measures of deforestation in the state. The study was based on a field survey. Three forest reserves in Ekiti State were selected for the study. These are Egbe, Ikere and Aramoko forest reserves. These are the forest reserves where the physical impact of deforestation was most felt. Indigenes of these three towns where these forest reserves are located were interviewed with the aid of questionnaire and focus group discussions. In total, four hundred copies of questionnaire were administered in the three resident towns of the forest reserves. Based on the population differentials, 211, 154 and 35 respondents were interviewed in Aramoko, Ikere and Egbe respectively. In all, 400 persons were interviewed through multi-stage sampling technique. The study identified the major human induced causes of the gradual disappearance of natural vegetation and other flora in the state as human activities like lumbering, dangerous agricultural practices, road construction, urbanization, pollution, industrial development, bush burning, and the search for wood and fuel. The study revealed that the most sought after of the flora species are those which are rare and, are of more desirability and high commercial value. Findings from the study show that population growth, demand for wood for construction and fuel, ignorance, poverty, land scarcity, and lack of environmental education are the driving forces behind deforestation. The study found out that the impact of deforestation is very severe on the ecosystem. Among them are contribution to biodiversity loss, soil erosion, reduction of species, loss of habitat, extinction of rare species, loss of valuable timbers, loss of genetic base, as well as removal of energy from the ecosystem. Hence, the call for sustainable agro-forestry.

**Keyword:** Ecosystem, Environment, Deforestation, Lumbering, Resources, Sustainable, Development.

### **INTRODUCTION**

The forest is a good source of food, income, ecological resources, social and cultural features, as well as physical facilities like power and building materials. Other functions of the forest are prevention of erosion, as well as the provision of essential habitat for wildlife to survive. Hence, the necessity to conserve the forest and the biodiversity therein. In addition to conserving biological and cultural diversity, it is now widely recognised that many protected areas also have important social and economic functions. These include protecting watersheds, soil and coastlines, providing natural products for use on a sustainable basis, and supporting tourism and recreation (Lee et. al, 2003). Studies in China have also confirmed that

medical herb production is a big business and that the suppliers have chosen to invest in forest protection and reforestation in order to guarantee future supplies (see Chen, 1983 and Hou, 1994 for greater details).

In spite of the multi-various usefulness of the forest resources, rapid population growth and changes in land uses have put the forest resources under pressure. For instance, Poore 1989 opined that majority of logging operations in tropical countries are considered unsuitable and damaging. The widespread failure of forest governance – characterized by illegal logging, associated illegal trade, and corruption-directly undermines sustainable economic growth, equitable development, and environmental conservation. It puts at risk poor and forest-dependent populations, which rely on timber and non-timber forest products; undermines responsible forest enterprises by distorting timber and reducing profitability; and results in a loss of government revenue that could be invested in sustainable forest management or general economic development (World Bank, 2006).

The major determinants of deforestation are the available natural resources in an area, how the resources are being used, traditional beliefs and myths, conflicts in the use of resources, population pressure, vis-a-vis the problem of pollution (soils, air or water). According to Meyer and Turner (2009), societies have profoundly altered their environments in the pursuit of wealth and power have been punished by environmental catastrophes (natural and man-induced). They opined further that world forest area has been reduced by some 20 percent and a large area of land converted from its original vegetation cover to cropping. The major cause of deforestation are increasing demand for housing and infrastructural facilities, crop and timber export, poor agricultural practices cutting of fuelwood for urban areas, headloading (cutting of fuelwood for sale), forest fires, logging, and overharvesting. Other causes are overgrazing, road construction, dam construction, as well as careless exploitation of forest resources.

A large empirical literature exists on the consequences of deforestation (see Rosenzweig and Parry, 1994; Western, 1999; Johnston, 1989; Bruijnzeel, 2004; and Brookfield, 1992). Deforestation is responsible for damage to habitats, biodiversity loss and aridity, extinction of rare species of plants and animals, climate change, environmental destruction and the subsequent damage to the sensitive living balance of the ecosystem. Also, empirical studies have confirmed that if we cannot look after the forest they will soon disappear (see Brockington, 2007; Hyde and Sedjo, 1992; Waston et al, 1998; Colin, 2001 and Khare et al, 2000). The threat to timber resources is being combated in most countries by vigorous afforestation. In addition, many have adopted stringent forestry laws, as in Norway and Sweden, to prevent waste, and elsewhere, experiments are taking place to find alternative materials for making paper (Whyne-Hammond, 1979).

Other strategies of combating deforestation are the use of alternative sources of energy other than fuel and charcoal, sustainable agricultural practices rather than slash and burn method of farming, land management, avoidance of indiscriminate bush burning, as well as promulgation and enforcement of environmental laws and forest policies. Likewise, mitigating deforestation entails forest conservation, protection of endangered species, as well as the promotion of ecotourism. These are the measures of achieving sustainable development.

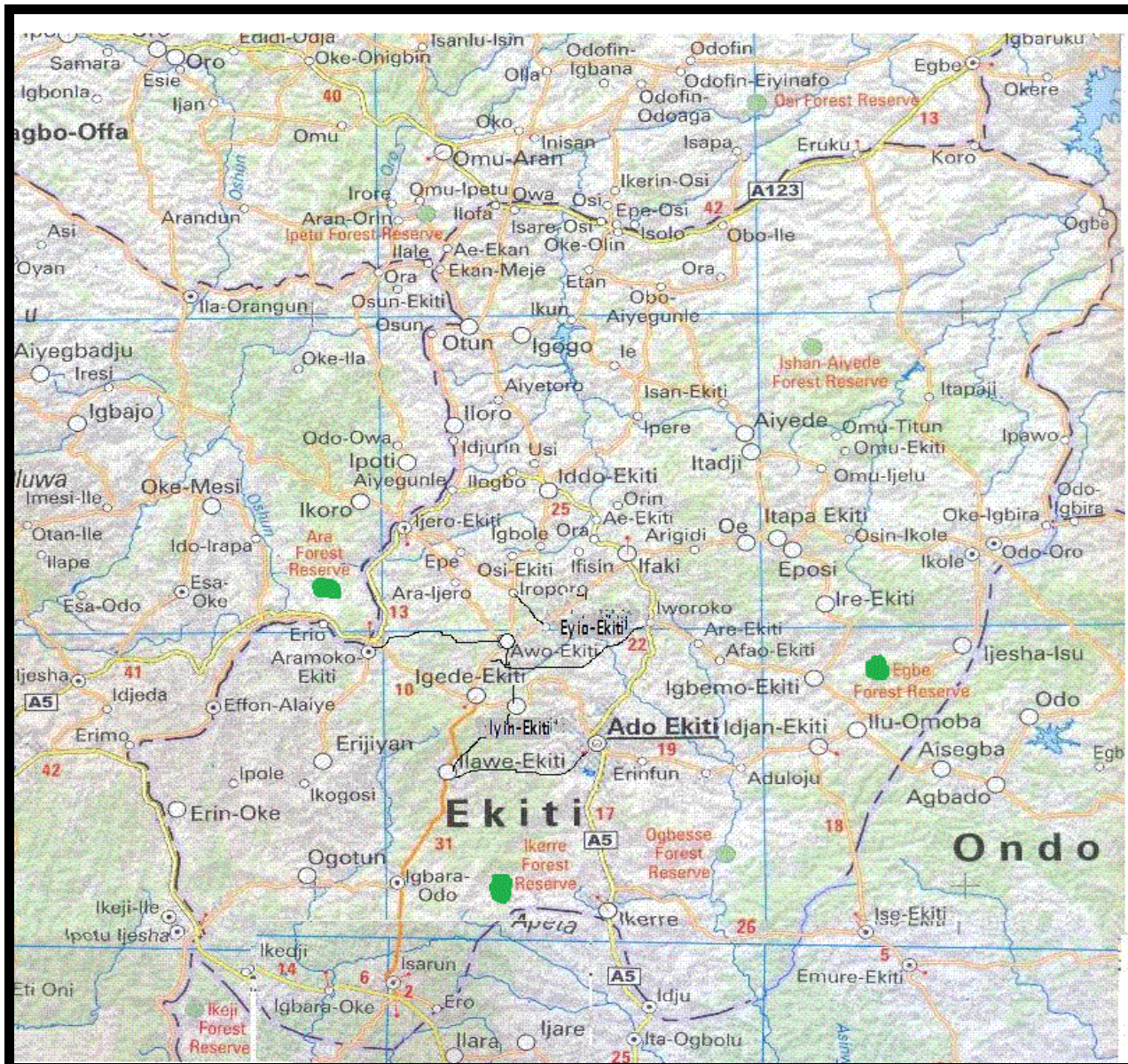
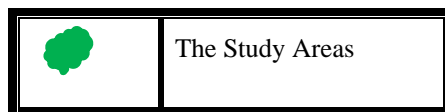


Figure 1: Forest Reserves in Ekiti State, Nigeria.

Source: Ministry of Agriculture, Ado-Ekiti, Nigeria.

LEGEND:



## **JUSTIFICATION FOR THE STUDY**

Forests provide numerous benefits to humans. These benefits may be direct e.g. in the form of timber and food they provide, or indirect through their contributions to production process, e.g. the protection of valuable agricultural land. They may also be intangible, e.g. cultural values (Landell-Mill and Porras, 2002). In spite of all the benefits of the forest, natural hazards and human influences are causing these resources to diminish on daily basis. Natural hazards that are responsible for deforestation include, earthquakes, hurricanes, landslides, volcanic eruption, tsunami, pestilence, drought, famine, flood, storm and avalanche. Also, human activities like overcropping, overgrazing, logging, road construction, indiscriminate bush burning, as well as dangerous agricultural practices are responsible for deforestation.

However, natural hazards are not prevalent in Ekiti State, Nigeria (the study area). Hence this paper focus mainly on man-induced causes of deforestation. Man-environment interaction is responsible for many environmental problems like deforestation, climate change, soil erosion, flooding, pollution, destruction of natural resources, and biodiversity loss. Deforestation is a serious environmental problem. It is responsible for the destruction of forest resources, reduction in rare species, as well as disappearance of natural vegetations. The forest reserves in Ekiti State are showing the pressure. The threat to the forest is a serious one. It is giving the government, private agencies, non-governmental agencies and individuals much more concerns. We are using forest materials more quickly than they can be replaced. The problem is also compounded by unclear property right, lack of monitoring and enforcement, poor use of resources, little participation of communities in policy formulation, poverty, uneven profit distribution, as well as aggressive intermediary market traders.

The problems that are associated with deforestation include overexploitation of other natural resources, low efficiency in forest tax collection, misuse and abuse of forest resources, decrease of forest stocks, lack of priority given to re-investment in forestry development as well as poor land management. Apart from these causes and part-consequences of deforestation, it is equally responsible for environmental degradation, loss of forest cover, reduction in the livelihood base of several millions of people, increase in rural poverty, as well as unemployment. In view of the consequences of deforestation, there is the need to look after the forest resources and its diversity. Also, in line with the 1992 Rio Earth Summit and the United Nations Environment Programme Convention on Biological Diversity, it is ideal to protect the forest so that it can continue to provide life support systems such as clean air, food and water.

To this end, this study was carried out in Ekiti State Nigeria, so as to investigate the causes and consequences of man-induced deforestation in the study area. The study recognizes the fact that logging is justified by the need to provide jobs in the rural areas, infrastructure in urban and rural areas, raw materials for housing, food for domestic animals, clothing for man, and to provide much-needed revenue. All the same, there is the need to mitigate the consequences of man-induced deforestation so as to maintain ecosystem services and achieve sustainable development.

## **RESEARCH METHODS**

A pilot survey was undertaken in the ten forest reserves in Ekiti State. Findings from the pilot survey revealed that the effects of man-induced deforestation were mostly felt in three of the forest reserves. Consequently, three forest reserves were selected for the study (see fig. 1). These are Ara forest, Aramoko (19.66km<sup>2</sup>), Ikerre forest, Ikere (14.19km<sup>2</sup>) and Egbe forest, Egbe (10.22km<sup>2</sup>). These are the forest reserves where the physical impacts of deforestation were most felt. Data

collection was largely through the administration of questionnaire. A close-ended questionnaire of 26 variables was designed for this purpose. 400 copies of the questionnaire were distributed and 393 were correctly administered and used for the purpose of analysis. A multi-stage sampling procedure was used to elicit information from the respondents. 211, 154 and 35 respondents were selected from Aramoko, Ikere and Egbe respectively. The sample covered a variety of different geographical socio-economic settings. The mean age of respondents was 47 years. The size of male and female samples are almost identical (52:48 respectively). Majority of the respondents (66%) falls within the monthly income interval of N15,000 – N20,000. 41 percent of the sample had received no formal schooling, 20 percent had attained primary school education or completed primary school education, and 39 percent had at least secondary school education. The majority of the respondents (81%) were married. During the course of the study, supplementary information were obtained from other sources like the official documents of the Department of Forestry, Ministry of Agriculture, Ekiti State, recounting of key events in the forest reserves, focused group discussions, as well as direct observations.

### **USEFULNESS OF FOREST RESOURCES**

Timber, fuelwood, poles, wood for charcoal making, fodder, and honey are the main products of the forest reserves. The forest is useful for wood as pulp, poles and fibre. It is a good source of employment, foreign exchange earning, food, raw materials for housing, provision of food for man and domestic animals, provision of clothing materials, provision of energy, as well as source of herbal medicines. Results from this study corroborates the findings of a study in India by Hitchcock (1996), that over 10,000 wild plants were used by tribal people and that out of these, as many as 8,000 were used for medicinal purposes.

The United Nations Convention to combat desertification recognized the fact that desertification is one of the major ecological problems in several areas of the world. It observed further that it threatens the existence of many population and recommended afforestation as a measure of combating desertification. Other functions of the forest are biodiversity protection, protection of watershed, landscape beautification, recycling of soil nutrients, carbon dioxide sequestering, as well as protection against erosion and flooding. Furthermore, the forest is a major source of support for local fishing, local climate, crops that are being grown and the soil on which crops are grown.

Other benefits from forest include the protection of the flora and fauna components of the environment, production of timber for furniture, preservation of biodiversity, reduction of carbon dioxide concentration in the atmosphere in order to check global warming, as well as the provision of shade in the case of urban and peri-urban forestry. Moreover, forests form a good source of employment, fuel wood, as well as edible fruits. Also, it is a good source of non wood forest products like rubber, latex, as well as eco-tourism products.

Mayers and Vermeulen (2002) noted that a large proportion of the world's population – 1.6 billion people-rely on forest resources for all or part of their livelihoods. The forest is a major source of food, forage, timber and fuel. It is a good source of income, rural employment and improved local infrastructure. The forest enhances the quality of life through its recreational use in terms of enjoyment, beauty and interest. Overall, the forest promotes culture and heritage through urban and peri-urban forestry. For short, the forest has social, economic, environmental, as well as welfare benefits. Landell-Mills and Porcas (1992) noted that forest goods and services benefit both local and global communities.

## **CAUSES OF HUMAN-INDUCED DEFORESTATION**

Researches have confirmed that both natural and anthropogenic forces are responsible for deforestation (see Stuart and Moura, 1998; FAO, 1997; World Bank, 1993; Arnold, 1998; Hyde and Sedjo, 1992; and Hamisi 2011). Deforestation could result from natural disasters like volcanic eruption, landslides, earthquakes, windstorms, natural extinction, environmental failure, extinction by development within the species gene pool, as well as extinction by inter-specific competition and substitution. Other natural disasters that are responsible for deforestation include thunderstorms, soil erosion, floods, and outbreak of diseases.

Further researches have confirmed that deforestation have stemmed from human activities (see Mankin, 1986; Waston et al 1998; Brookfield, 1992; Khare et al 2000; Ibimilua and Ibimilua, 2011; and Bruijnzeel, 2004). Population growth and increasing demand for food is a major cause of man-induced deforestation. For instance, Julian (2011) opined that forest clearance for agricultural purpose is a major cause of deforestation. He noted further that this problem accounts for close to 20% of the annual emissions of green house gases. Other causes of deforestation are unbridled bush burning, increase in exploitation of forest resources without corresponding regeneration, crop and timber export, logging, over-harvesting and removal of immature trees, as well as overgrazing.

The level of demand for forest products, both nationally and locally is ever-increasing. Hence, farms and forests are expanding into fragile habitats as a result of demand for wood, fuel and other subsistence needs. For instance, cutting of fuel wood for urban areas is a major cause of forest fragmentation. Also, clearing of forest for housing, industrialization, dam construction, mining and road construction have put more pressures on forest resources. Furthermore, habitat loss, habitat fragmentation and extinction of rare species are caused by indiscriminate bush burning, hunting application of herbicides, oil spillage, bomb explosion, air crashes, as well as ethnic and religious conflicts.

Moreover, poverty and the need to satisfy some subsistence needs are major causes of deforestation. The problem is also compounded by urbanization, globalization, inequitable distribution of income, as well as population growth. In addition to that, deficient environmental laws, poor forest management, ignorance or disregard of the intrinsic value of forest, lack of ascribed value as well as corruption of government institutions are responsible for deforestation. Closely related to the above mentioned causes of deforestation are lack of basic education and awareness about the need to protect the forest, institutional weakness, as well as weak enforcement of environmental laws and sanctions against offenders.

## **EFFECTS OF DEFORESTATION**

The consequences of deforestation are devastating on man and the environment (see Brockington, 2007; FAO, 2007; Gutman, 2001; Planning Commission, 1998; and Collin, 2001). It is responsible for the impoverishment of the communities that rely on forest resources as their means of livelihood. Also, deforestation is responsible for loss of forest products, biodiversity loss and extinction of some rare species, decline in the function of conserving watershed, as well as removal of energy from the ecosystem. Likewise, deforestation contributes to the loss of valuable agricultural land, reduction in underground water, and forcing out of animals species from their natural habitats. Persistent deforestation gives way to flooding and erosion, and pollutes air, water and soil.

Deforestation has tremendous effects on the environment. It damages the sensitive living balance of the ecosystem. It is a major contributor to climate change and its side effects. It plays a key role in carbon dioxide absorption and can consequently upset hydrological systems beyond the area of logging. Overall, deforestation can lead to the upsetting of the ecological balance that takes decades to develop. Consequently, deforestation is responsible for habitat destruction, decrease in soil fertility, loss of valuable trees and rare species, as well as loss of non-timber forest products. In all, deforestation is a major cause of environmental destructions.

Researches have confirmed that deforestation has adverse effects on tourism. (see Arnold, 1998; Li, 1996; and Waston et al., 1998). It affects the local geology, topography and management of the land. For instance, it has led to the extinction of rare species of animals that are good for safari tourism. Also, many species of chimpanzee and gorilla in Ekiti State, Nigeria have been endangered by bush burning, hunting and other associated causes of deforestation. Findings from other researches have confirmed that the effect of deforestation in terms of global warming, desertification, biodiversity loss, environmental instability, increased watershed instability, as well as habitat loss and the subsequent displacement of population all have remote consequences on recreation, tourism and sustainable development.

## **FINDINGS**

This study revealed that Ekiti State, Nigeria is blessed with many forest resources. The forest is a good source of employment, food, foreign exchange earning, sport conservation, and a good habit for wildlife to survive. Also, it is a good source of medicine like aspirin, antibiotics and anti-cancer products. Afforestation programmes in Ekiti State started early with the creation of the state in 1996. These include:

- (a) State Government;
- (b) Federal Government;
- (c) Local Government;
- (d) Private Woodlot Developers.

The State Government embarked on regeneration of degraded areas of the forest reserves. Sources of fund were the Forest Trust Fund (FTF) and Timber Development Levy (TDL). The FTF is the 25% of revenue generated by forestry which should be ploughed back for regeneration programmes while the TDL is the N200 paid by every permittee in lieu of “cut a tree, plant two”. The Federal Government through the afforestation intervention programme established 88.6 hectares and 45 hectares of Teak/Gmelina in 2007 and 2009 respectively in Ogbese and Egbe Forest Reserves. Also, in 2011, the ecological office of the Federal Ministry of Environment under the Presidential Initiative on Afforestation raised 1 million seedling of Teak, Gmelina and Cashew for planting.

In 2004, the Forest Department established 25 hectares in each of the 16 Local Government in Ekiti State. After planting, the maintenance operations were left for the Local Government because the Project was financed by the Local Government and the woodlot so established belongs to the respective Local Government. Furthermore, when it was observed that interest in plantation development was increasing among the communities, individuals and institutions, the Forestry Department raised

about 500,000 seedlings of *Teach* and *Gmelina* and distributed them to interested applicants. Since then, there had been tremendous increase in private woodlot development. Majorly, there are a nine forest reserves in Ekiti State (see table 1)

TABLE 1: FOREST RESERVES IN EKITI STATE NIGERIA

S/N	LOCAL GOVERNMENT AREA	FOREST RESERVE	HIGH/F (KM <sup>2</sup> )	SAVAN NAH (KM <sup>2</sup> )	TOTAL SIZE (KM <sup>2</sup> )	REMARKS
1.	Ado	Ogbese	67.32	5.2	72.52	Exploited & Recouping
2.	Gbonyin	Egbe	6.47	2.75	9.22	Exploited
3.	Ekiti East	Eda I & II	5.18	3.88	9.06	FRS Research Plot. Not to be disturbed
4.	Ekiti South West	Ogotun Grp	10.36	5.33	15.69	75% unexploited with difficult terrain
5.	Ekiti West	Aramoko	19.66	-	19.66	Exploited
6.	Ikere	Ikere	9.58	4.61	14.19	Exploited
7.	Emure	Little Ose	13.67	12.62	26.29	Exploited (degraded)
8.	Ise-Orun	Ise	55.56	1.26	56.82	Partly committed
9.	Emure	Eporo	10.36	36.26	46.62	Protected derived savannah forest
10.	Oye	Isan/Ayede	-	25.85	25.85	Woodland savannah forest
			198.16	97.76	295.92	

Source: Department of forestry, Ministry of Agriculture, Ekiti State, Nigeria

(2011)

Moreover, series of plantations have been established in Ekiti State. These range from Forest Trust Fund assisted programmes, Timber Development Levy programmes, Agro-forestry programmes, down to state government funded programmes, and Federal government assisted programmes (see table 2).



TABLE 2: PLANTATION ESTABLISHMENT IN EKITI STATE, NIGERIA THROUGH DIRECT LABOUR (1997-2009)

YEAR	PROJECT TITLE	ACHIEVEMENT (HA)
1997	FTF	100
1998	FTF	130
1999	FTF	50
2000	FTF	70
2001	FTF	70
	TDL	40
	Agro-Forestry	75
2002	FTF	70
2003	FTF	50
2004	State Government Funded	70
2005	FTF	Nil
2006	Federal Government Assisted	88.6
2007	State Government Funded	100
2009	Federal Government Assisted	45
	Total	958.6

Source: Department of Forestry, Ministry of Agriculture, Ekiti State, Nigeria (2011).

Furthermore, woodlots are distributed over the sixteen local government areas of the state. Nevertheless, some of them have been destroyed by the various factors that are responsible for deforestation (see table 3)

TABLE 3: WOODLOT DISTRIBUTION IN THE LOCAL GOVERNMENT OF EKITI STATE (2004-2005)

S/N	LOCAL GOVERNMENT	AREA (HA)		REMARKS
		2004	2005	
1.	Oye	25	20	Sustainable
2.	Ikole	25	20	Sustainable
3.	Gbonyin	25	20	Sustainable
4.	Ekiti East	25	23	25 Hectare destroyed (2004)
5.	Ekiti South West	25	12	Sustainable
6.	Ise/Orun	25	20	Sustainable
7.	Emure	25	20	Sustainable
8.	Ikere	25	-	Part destroyed (2004)
9.	Ado	25	20	Sustainable
10.	Irepodun/Ifelodun	25	22	Sustainable
11.	Efon	-	12	All destroyed due to land dispute in 2004
12.	Ekiti West	25	10	Sustainable
13.	Ido-Osi	25	20	Sustainable
14.	Ilejemeje	25	20	Sustainable
15.	Moba	25	12	Sustainable
16.	Ijero	25	20	Sustainable
	Total	375	271	
	Grand Total		646	

Source: Department of Forestry, Ministry of Agriculture, Ekiti State, Nigeria (2011).

The study revealed that major causes of deforestation are lumbering, shifting cultivation, demand for wood for construction and fuel, bush burning, poverty, cattle rearing, road construction, as well as technological progress and rising standard of living (see table 4).

TABLE 4: MAJOR CAUSES OF HUMAN-INDUCED DEFORESTATION

CAUSES	RESPONSE	PERCENTAGE
Lumbering	201	51.15
Agriculture	59	15.01
Demand of wood and construction	44	11.20
Clearing of forest for housing	30	7.63
Road construction	27	6.87
Bush Burning	18	4.58
Cattle rearing	5	1.27
Others	9	2.29
Total	393	100

Source: Fieldwork, 2010.

The study revealed that the establishment of sawmill industries is proliferating in the state. In all there are two hundred and six saw mills in the state and this has put more pressures on the forest resources in the state (see table 5).

TABLE 5: DISTRIBUTION OF SAWMILLS IN EKITI STATE

S/N	LOCAL GOVERNMENT	NO OF PREMISES	NO OF UNIT
1.	ADO-EKITI	21	25
2.	IFELODUN IREPODUN	6	6
3.	EKITI WEST	3	3
4.	IKERE	13	20
5.	ISE	17	27
6.	EMURE	5	12
7.	EKITI SOUTH WEST	11	17
8.	ILEJEMEJE	1	1
9.	IKOLE-EKITI	13	15
10.	GBONYIN	28	33
11.	EKITI EAST	18	20
12.	OYE	13	15
13.	IDO-OSI	7	7
14.	IJERO	4	4
15.	OGUN	1	1
16.	EFON	NIL	NIL
	TOTAL	161	206.

*Source: Department of Forestry, Ministry of Agriculture, Ekiti State,*

*Nigeria (2011).*

Furthermore, the study revealed that deforestation has several effects on man and his environment (see table 6). It is responsible for loss of trees, loss of soil, biodiversity loss and aridity, desertification, loss of genetic base, habitat destruction and the subsequent displacement of population, as well as flooding. This research has also confirmed that deforestation is responsible for the removal of energy from the ecosystems. Also, it is a major element in climate change. This study corroborates the view of Bruijnzeel (2004) that removal of forest cover leads to erosion in some circumstances, depending on local geology, topography and management of the land during and after the removal of the forest cover.

TABLE 6: EFFECTS OF DEFORESTATION

EFFECT	RESPONSE	PERCENTAGE
Loss of trees	118	30.03
Biodiversity loss	99	25.19
Removal of energy from the ecosystem	62	15.78
Habitat destruction	53	13.49
Loss of genetic base	23	5.85
Contribution to climate change	21	5.34
Soil erosion	10	2.54
Others	07	1.78
Total	393	100

Source: Fieldwork, 2011

## RECOMMENDATIONS

The loss of biodiversity is of great concern the world over, and the loss of tropical forest biodiversity has been singled out for urgent attention (Landell – Mills and Porras, 2002). To this end, FAO 2003 noted that if the trends should continue, 24% of mammal species and 12% of bird species would face the risk of extinction in the near future. In order to halt the continual rate of deforestation, there should be rapid afforestation by the state government and private owners. The continued rapid afforestation programme should be coupled with increased private sector participation. Also, afforestation programmes should put into consideration improved varieties, draught resistant plants, as well as intercropping of trees with legumes.

In order to achieve sustainable forest development, unlawful flogging of forest should be prevented. Also, indiscriminate bush burning should be avoided. In addition, illegal falling of trees should be prevented. Above all, indigenous trees should be well conserved. Furthermore, agroforestry, which is the practice of allowing trees and crops to grow together in the forest or on the farmland should be encouraged. Other measures of sustainable forestry are improved farming techniques, the use of new energy sources like solar, wind and hydro power, planting of more draught resistant trees, as well as the protection of unique and important forest areas.

Moreover, sustainable forest should involve collaborative management of forestry resources. This should encompass local communities, groups of resources users, as well as conservation authorities. The protection of forest resources for future generation should also include land management, better forest management, recognition and enforcement of environmental

laws and enforcement of community participation in agro-forestry. Other measures of sustainable forestry are promotion of sustainable ecotourism, environmental protection and monitoring, poverty eradication, managed grazing, forest permit and licencing implementation, as well as alternative livelihood instead of overdependence on wood products. Collin (2001) noted that a possible way of reducing the overdependence on forest and other natural resources is the promotion of rapid improvement of rural livelihoods.

Meeting the livelihood of forest communities also involve reafforestation, peri-urban forest conservation, protection of endangered species, selective cutting and strip cutting, control of population growth, as well as recycling of wooden materials. Careful, rational and intelligent use of forest resources is a pre-requisite to resource utilisation. This can be achieved through reduction in traditional fallow period, park and nature conservancy, training of farmers in sustainable agriculture and agroforestry techniques, reduction in human negligence and carelessness, as well as the regulation of forest management in order to prevent the negative environmental consequences.

## **CONCLUSION**

This study demonstrates that the forest has socio, economic and environmental benefits. The economic benefits include source of income, diversified products, employment gain, as well as provision of improved infrastructural base. The social benefits are resource tenure security, improved health, knowledge and research opportunities, as well as increased recreational and cultural opportunities. The environmental benefits include improved supply of marketed services as well as positive spin off for non-market services. The effects of deforestation include loss of rights to forest resources, reduced health, negative cultural impact, flooding, erosion, as well as climate change and global warming.

This paper revealed that societies have profoundly altered their environment in the pursuit of wealth and means of survival. The study corroborates the findings of Meyer and Turner (2004) that a significant proportion of world forest area has been converted from its original vegetation cover to cropping, housing and other land uses. Man-induced deforestation is mainly for livelihood and continual survival of man. However, most of the destructions to the forest are done out of poverty and ignorance. The effects are catastrophic on man and his environment. Thus, in order to mitigate the negative consequences of deforestation the study recommends that reduction in the rates of deforestation, improved fire protection, introduction of techniques for controlled logging, direct preservation, reforestation, as well as monitoring of forest through satellites, geographic information systems and remote sensing techniques.

This study supports the findings of Stuart and Moura (1998) that afforestation is a measure through which we can mitigate climate change. They observed that no country is immuned from the threat of climate change and that all contribute in some manner to the problem. Hence, they proposed a series of instruments to promote reduction in green house gas emissions. Among them are economic, social, environmental and political considerations. Other options are recycling, reforestation of unproductive land, conservation of natural forests, management of plantations, rehabilitation of degraded agricultural land, as well as low-emission, waste water treatment. Finally, the mitigation of the consequences of deforestation is necessary in order to achieve the major aim and objectives of the World Trade Organisation, the framework Convention on Climate Change (1995), the convention on Biological Diversity (1993), Environmental Protection Act (1986), the Wildlife Protection Act (1972), and the Forest Conservation Act (1980) which all focused on the protection of environmental resources.

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