

Chapter 1

Introduction

“You must not deal only with the symptoms. You have to get to the root causes by promoting environmental rehabilitation and empowering people to do things for themselves. What is done for the people without involving them cannot be sustained.”
Wangari Maathai (Nobel Peace Prize winner, 2004)

Kenya’s forests continue to decline and the situation can no longer be ignored.

This can be attributed to a number of reasons but this paper is going to specifically address two dimensions and assess their contribution to the near annihilation of a natural resource that has the monumental task of supporting all forms of life. The rate at which the Kenyan forests are being depleted is so alarming that it is largely becoming a global concern as trickle-down effects are felt far and wide. When a country depletes its forests, then it has to rely on other countries for ecological services and this is when it becomes a global problem. This dismal reality of deforestation as pervasive as it is at the present warrants a thorough investigation in an era where there are tremendous technological innovations and globalization but ironically the conservation efforts and policies in place seem to be steering the rate of deforestation in the wrong direction; increasing deforestation instead of the contrary.

Due to the difficulty encountered in accessing data from the various sources in Kenya, this is going to be a case study of the cultural and economic dimensions of deforestation in Kenya with literature review and methodology sections merged. A case study can be defined as a particular method of conducting quantitative research. Rather

than using large samples and following a rigid protocol to examine a limited number of variables, case study methods involve an in-depth, longitudinal examination of a single instance or event: a case. In this paper, I will address deforestation in Kenya. Case studies provide a systematic way of looking at events, collecting data, analyzing information and reporting the results. As a result the researcher may gain a heightened understanding of why the instance happened as it did, and what might become important to look at more extensively in future research. Case studies lend themselves especially to generating hypotheses rather than testing them http://en.wikipedia.org/wiki/Case_study.

1.0 Definition

Deforestation can be defined as the conversion of forests into another form of land use mainly agriculture and development projects like roads and railways but it can also be as a result of exploitation of forest resources for human use like charcoal burning, wood carvings and so on. Regardless of the cause, deforestation leads to a considerable loss of forest cover and vegetation in any given region that can result in environmental degradation.

1.1 Background Information

For the purposes of data used in this paper, it is imperative that the reader familiarizes himself or herself with the following map of Kenya. Politically, the country is divided into 8 provinces each with its own kind of topography and consequently unique vegetation not to mention ethnic diversity and cultures. The 8 provinces and their characteristic vegetation are:

- **North Eastern:** Vegetation is mainly desert shrub and grass. It is prone to Marsh and swamp especially in the rainy season due to low relief.
- **Eastern:** Desert shrub and grass dominate the north while savanna dominates the south.
- **Rift Valley:** This is also desert shrub to the north but the south is savannah with regions of montane and riverine forest
- **Western:** Montane forest and savanna forest
- **Central:** Montane forest and savanna forest
- **Nyanza:** Largely savanna
- **Nairobi:** Savanna forest
- **Coast province:** A mixture of coastal brush; montane, riverine, and coastal forest; marsh and swamp; and desert shrub and grass.



Figure 1: Geographical Map of Kenya: <http://kenya.africa-atlas.com>

The map shows where the National Parks and the Game Reserves are: the giraffe Icon. This is important because land in Kenya falls under different jurisdictions and as discussed later in details, the parks/reserves are fenced off or demarcated by the Kenya Wildlife Service (KWS) and for that reason, conservation efforts and their sustenance are significantly different from other areas depending on the approach used by the governing

body. This might aid the understanding of the prevalence or distribution of deforestation in Kenya.

There seems to be very limited, if any, available data to clearly depict the journey of Kenya's forests from the past to the present. Numerous changes have occurred undocumented especially due to the limited research on environmental issues in Kenya. However, despite the limited data on the history of deforestation in Kenya, two things are certain: First of all, the existing trend shows that Kenya continues to lose its forest cover with time and secondly, if no measures are put into place, this trend could have a devastating effect on the environment both locally and globally. One possible effect of deforestation is the drying up of rivers resulting in a crumbling agricultural sector. For Kenya, being an agrarian country, that would mean that there would be no food available locally and the country would rely on donor aid and relief food from other countries. Therefore, the problem is not only local but global as well and that is why the necessary steps must be taken to stop it.

The Kenya Indigenous Forest Conservation Program (KIFCON) estimates the country's closed canopy forests to cover 1.24 million ha, which is just about 2% of the country's total land area. This was in the period between 1991 and 1994; given the recent occurrences in the country's forest sector like illegal logging, resettlements, and land grabbing, current statistics might prove quite dismal. However, the total area of forest cover in Kenya remains very controversial due to the fact that not all areas that are

branded forests contain forests. For example, while 64% of forest reserves are covered by indigenous forests, 25% is covered by non-forest vegetation and 9% is plantation forest. (Wass, 1995)

Taking the small hectarage of Kenya's forests into account, a slight change would undoubtedly have an impact strong enough to elicit concerns amongst the people of Kenya and the world at large. Historically, the conservation efforts began in the late 1800s. This was probably as a result of recognition by the then colonial government that deforestation was taking place or forest cover was originally too scanty to be depleted and hence the onset of forest conservation. While some practices in place then may pale in comparison to the recent ones, they set the stage for current forest management techniques and in fact some of them are still in operation.

Further literature review confirms that deforestation is indeed not a very recent phenomenon in Kenya. It all began with forest legislation and the introduction of the *Shamba System* in 1943 (adopted from the *Taungya System* of South America) to promote agro-forestry. In this system, communities assisted the Forestry Department (FD) in the establishment of forest plantations by intercropping young trees with food crops until the trees matured. As time went by, emerging issues of forest exploitation under the *Shamba System* became salient and it was abolished to get people out of forests which were then gazetted soon afterwards for enhanced protection. Since then there has been forest acts that are amended as need arises, albeit at a slower pace due to divergent

views amongst the key players involved.

The need to distinguish between agricultural land and forests for conservation purposes is still elusive. In an effort to create physical boundaries between forests and land for agriculture, the Kenya Government formed the Nyayo Tea Zones Development Cooperation in 1986. Under this Co-operation, buffer zones were created to physically separate land for agriculture and forests while providing a source of income and employment for the local people. This again proved futile because communities continued to secretly invade and exploit nearby forests. In a nutshell, there is enough evidence to conclude that the interactions between humans and forests in Kenya are comparable to parasitism with humans being over dependent on forests resulting in gradual deforestation (<http://www.wrm.org.uy/deforestation/africa/kenya.html>).

Chapter 2

Literature Review/Methodology

2.0 Categories of Forests in Kenya

According to Dominic Walubengo in his concept paper, '*From Deforestation to Re-afforestation: Turning around Kenya's forest*', Kenya's forests fall into five main categories:

- (a) Montane forests found on Mt. Kenya and Mt. Elgon. These are the two major mountains in Kenya.
- (b) The remnants of rain forests found in Kakamega in Nyanza province and Mau (Rift Valley) and part of the coast. Remnants because most have dwindled away with climatic changes commonly attributed to global warming and also possible deforestation from logging.
- (c) Coastal mangrove forests found at the coastal area
- (d) Dry land forests found in the arid and semi arid lands of the country. This is mainly in the North and north eastern parts of Kenya close to the borders of Somalia and Ethiopia.
- (e) Plantation forests found in areas such as Turbo, Nandi and Molo containing species like pines, cypresses, eucalyptus and cedar. Plantation forests are mainly found in the Rift Valley province. (Walubengo, n.d.), (http://www.fanworld.org/art_fserv.html)

This classification is based on the topography/terrain of the regions hence the unique

kinds of vegetation in the different regions. The highest point is Mt. Kenya (5199 meters) and the lowest is sea level in the Coast province.

2.1 Forest management in Kenya

Kenya's forests are managed by the following agencies:

- (a) Forest Department (Government agency), which is responsible for the gazetted, forests which may be indigenous or plantation.
- (b) The Kenya Wildlife Service (KWS), which governs those forests, which fall under the area, controlled by the Service and this is all the national parks and game reserves.
- (c) County Councils (Local Governments): forests in the trust lands and on hills
- (d) Private people or companies are mandated to cater for forests on private lands resulting from ownership, http://www.fanworld.org/art_fserv.html.

2.2 Problems

In the same concept paper, Walubengo (n.d.) further comments on the state of deforestation in Kenya and the following are highlighted as the most salient problems facing this issue. The reality on the ground is that forests that are managed by the Forest Department and the County Councils are not performing their functions and are in fact dwindling at a high rate. On the other hand, those forests that fall under KWS or are owned by private companies are thriving. It is obvious to the reader that the government is largely blamed because it has no proper forest management policies in place evident from the state of forests that fall under its jurisdiction namely the Forest Department and the City Councils.

Walubengo further notes that the Forest Department in particular has three major problems that must be solved urgently:

(a) There is animosity and mistrust between the communities that border forests and the Forest Department as personified by forest guards and forest officers. An example is the Ogiek people of Kenya who are culturally forest dwellers but have been evicted from their sources of livelihood under the guise of conservation of the forests but the opposite is indeed happening. From the government's perspective the result is that there are constant skirmishes with communities; there are illegal squatters in forests; forests are often set on fire; and communities do not protect forests against illegal poachers. This state of affairs, each side blaming the other, is not alleviating the country's forests problem.

(b) There is not enough transparency and accountability in the management of forests. Thus in a number of areas, forest officers and forest guards hold their own "courts", "fine" offenders, and confiscate whatever has been illegally obtained. The fines and the confiscated materials end up in the pockets of the forest officers or forest guards. In other areas, foresters collude with timber companies to defraud the state. The elusive nature of the exact extent to which poverty contributes to this still persists. Lack of ethics where the key players are enticed by monetary gains beyond their moral thresholds are also factors making this intricate web of decay difficult to correct. Further still, forestland has been allocated to "developers" under very unclear circumstances, while in others even

water catchment areas have been placed under agriculture by local communities. All these have led to forest degradation and demoralization of honest officers.

(c) The Forest Department does not attract adequate resources to enable it to run efficiently. The allocation from the Treasury is only enough to pay salaries and provide essential services. Again this can be attributed to the lingering poverty that continues to plague third world countries and the result is that forest extension is now non-existent, tree nurseries are not operating, there is no forest protection capability and worse, there is no capability to reforest. Further, because the department has not got the capability to re-afforest, some non-resident cultivators have been working on the same forest plots for up to ten years, making it difficult to evict them.

In the light of such harsh criticism of the government, the question then becomes, “What are the communities doing locally to save the day?” This leads me to a close scrutiny of the economic and cultural aspects in Kenya and the role they play in deforestation and vice versa in a bid to forge a way forward.

2.3 Review of Literature

This being a case study of Kenya, archives and documents, policy papers, and other publications were used for data collection. A look at the documentary evidence in Nairobi, the capital of Kenya, reveals that some studies have been done in an effort to trace the origin and cause of deforestation in Kenya but a lot still needs to be done. The

political situation in Kenya has always been largely blamed for the annihilation of forest resources and probably for justifiable reasons as first noted in the introduction but a closer exegesis of the situation illuminates more than meets the eye. Kenya is a country of diversity with about 43 different communities, and hence an almost equal amount of diverse ways of life commonly referred to as culture. A close scrutiny of the cultures of Kenya demystifies some of the cultural factors playing a major role in this destructive process.

2.4 The Cultural Dimension

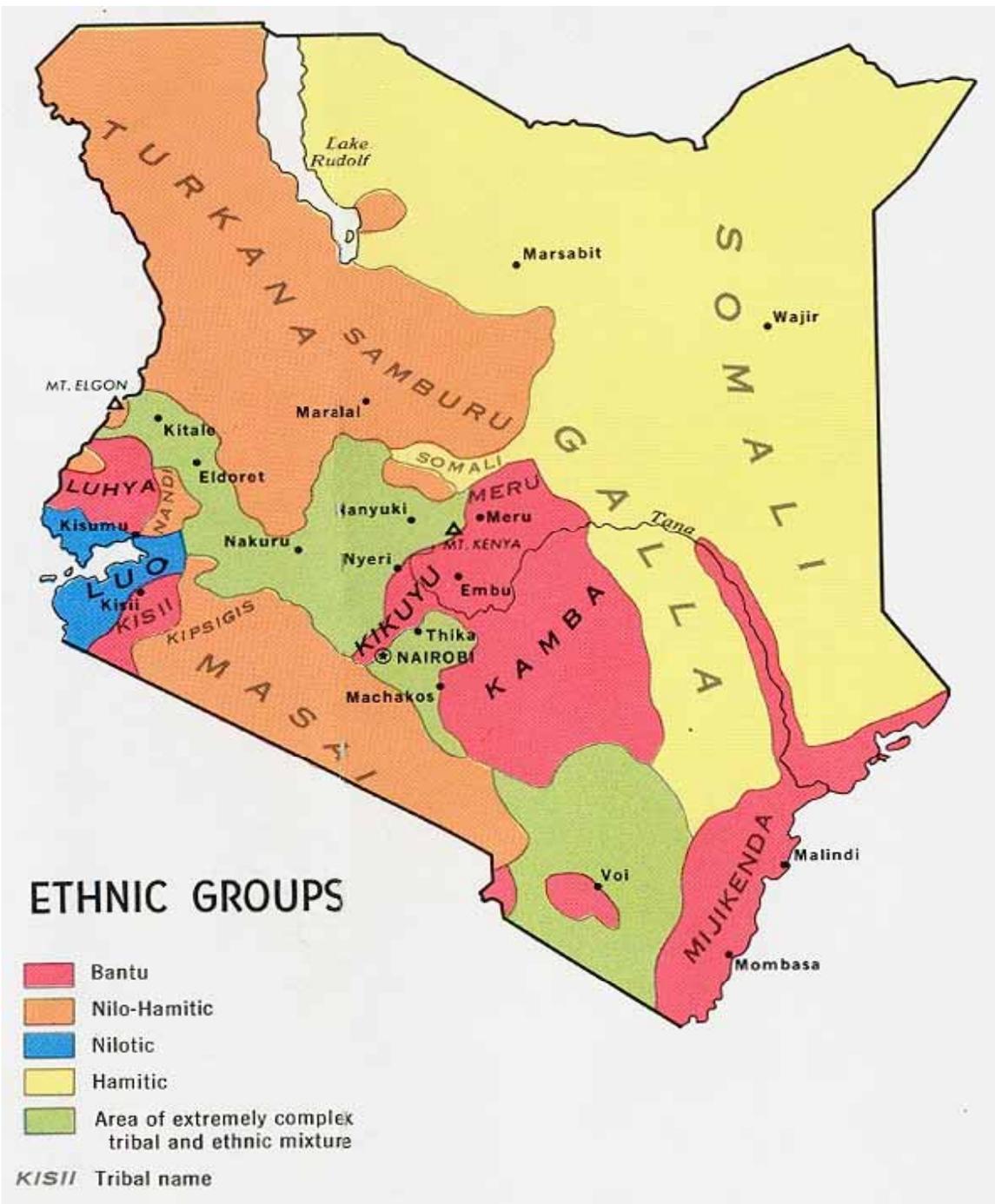


Figure 2: An Ethnic Map of Kenya (http://www.lib.utexas.edu/maps/africa/kenya_ethnic_1974.jpg.)

Figure 2 shows the major groups of people in Kenya. It is important to note the subgroups within the larger groups representing tribes.

2.4.1 Religious Beliefs

To begin with, some tribes have, since prehistoric times, attached religious significance to certain trees and this cultural knowledge is passed down generation to generation. Traditionally, most tribes in Kenya came to associate certain trees with certain mythical beliefs that have seen the preservation of those trees over time. For example, the Mugumo Tree (*Ficus thoningii*) is sacred to both the Kikuyu and the Luhya tribes. Consequently, it grows into a huge tree that nobody touches for fear of the wrath of their God. Traditionally, it is under this tree that the old people who were mandated to offer sacrifices on behalf of the entire tribe did so and then completed their ritual by pouring libations to make their peace with their God.

There have been folk tales told to young children as they grow up, of people that cut down the Mugumo tree and it transformed them into animals or ghosts. It was believed that women who were barren would conceive if they ran around the tree seven times. Whether these were just tales or recitals of actual happenings remains unclear or even controversial but the effects of such religious beliefs can be widely seen all over the country because some trees have survived through generations while others are logged sometimes to create space for the revered tree to excel. Consequently logging is adjusted to suit such cultural beliefs.

The Mugumo tree is a very bushy gigantic tree that grows especially in montane forests. This is partly the reason why most prayers were held in the vicinities of the mountains facing the tip of the mountain where God was commonly known to reside.

Figure 3 is of a young tree.



Figure 3: The Mugumo Tree: (<http://www.szirine.com>)

A quote from the Kenya web summarizes the significance of this tree:

“The traditional myths define the Agikuyu (Kikuyu) god as Ngai. Ngai is believed to have been residing on Mt.Kenya. This mountain was thus a sacred mountain to them. They used to pray to Ngai facing the mountain. They also had a religious tree – *the Mugumo tree* – where they would offer their sacrifices to Ngai.”

www.kenyaweb.com/people/kikuyu.html

Logically, the Mount Kenya region is heavily wooded with this sacred tree.

According to Elizabeth Waichinga in her article “The Mugumo Fig Tree of Kenya” (2004), “The Mugumo tree, having survived centuries, makes it the only existing tomb for the ancient heroes of this land. Maybe their spirits too are hovering around it giving the tree its sacred importance and hence its special cultural importance.”

According to a report compiled by The World Conservation Union (IUCN) and The World Wide Fund for Nature (WWF) in May 2002, in addition to such sacred trees such as the Mugumo tree and others, certain forested areas were considered sacred with felling and collection of forest products strictly prohibited or strict regulations in place. Examples are *kayas* among the coastal Mijikenda tribes and *mukurwe wa nyagathanga* among the Kikuyu tribe, (FAN, 1996). Certain tree species were planted to honor deceased ancestors such as the Mugumo (*Ficus thonningi*) among the Kikuyu and Luhya, coconut trees among the coastal tribes and Baobab among the Kamba tribe. Among the Luo tribe of Nyanza, branches of the sausage trees (*Kigelia africana*) were buried to represent unrecovered bodies of members of the community who drowned in Lake Victoria. One thing was certain: the felling of these trees was taboo (KIFCON, 1994).

Clearly, this shows how tenacious cultural practices have seen the preservation of certain kinds of trees and forests. The Kikuyu people are not the only ones with revered trees; other tribes fiercely guard their sacred trees which are peace symbols to them. If a tree has to be cut down for whatever reason the people have to seek permission from the tree itself. Prayers like this are common in the Ogiek community of Kenya:

*Oseki tree, we pray
Give us permission to cut you
Surely, it is not to wound you
Or to harm you
Give us permission
It is to take peace from you*

*That we ask of you
Peace for our homes*

According to Sultan Somjee (2001), an ethnographer based in Nairobi,

“These trees fostered civil values in a variety of contexts. The migration paths of the three great traditions of East Africa – the Bantu conglomerate of cultures originating from West Africa, the Nilotic from the Nile corridor and the Cushitic groups from the Red Sea region – are landmarked by sacred trees. Till today, groups from each of these three streams evoke the olive tree, the fig tree and the acacia in their prayers for peace.”

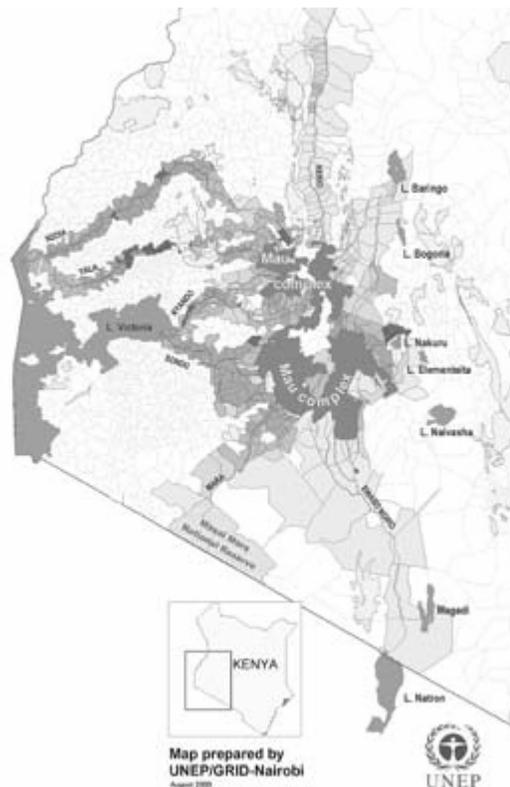
2.4.2 Superstitious Beliefs

In the old days, either due to lack of knowledge as we know it or pervasive superstitious beliefs, trees were also believed to have the power of ‘bringing down rain from the heavens’ and for that reason, they were generally preserved for the dread of drought. Of course modern knowledge clarifies that trees and thus forests act as water catchment areas but in retrospect, the actual role trees played in rainfall formation was shrouded in mystery. The masses believed that they had to have supernatural powers to do something as awe inspiring as bringing down the rains from heaven and because of those special powers they were revered leading to conservation. This inclination to attribute natural phenomena to supernatural powers is largely cultural. At present, as more formal knowledge takes hold and equally peoples’ values change, a remarkable change in vegetation is also evident.

2.4.3 Forest Dwelling

Some traditional communities were also forest dwellers that refused to leave the forests because they believed, and still do, that the forest is their home and nobody else would conserve their home better than they themselves could. They basically worshipped the forest and due to this almost total sacred attachment very little harm was done to the forests. An example is the Ogiek People of Kenya. These are forest people that have defied every government intention and effort to relocate them, albeit unsuccessfully, and this has resulted in a perpetual struggle between the community and forest officials appointed by the government. Before all these changes happened the people co-existed with the forest ecosystem and had their intricate conservation techniques stemming from years of experience living in the forests. Needless to say, since the government's efforts to forcefully oust them from their home, the landscape has also seen considerable changes.

Figure 4: The Mau complex, a critical water catchment area in Kenya



<http://www.wrm.org.uy/deforestation/africa/kenya.html>).

According to Lynette Obare and J.B Wangwe (n.d.) in their publication, “Underlying Causes of Deforestation and Forest Degradation in Kenya,” the Ogiek are the largest group of forest dwellers in Kenya inhabiting the Mau Forest (see Figure 4) in the Mau escarpments of the Rift Valley province in Kenya about 200 km to the south west of Nairobi. The forest contains the largest remaining block of most indigenous forest in East Africa covering an area of 900 square kilometers. Since time immemorial the

Ogiek have lived in the forest dividing it amongst clans using natural features like rivers, valleys, and hills. Forest resources played an important role in their culture and this rendered their preservation vital. Their conservation measures that were passed on by the elders to the younger generations include:

- Ensuring that there were no forest outbreaks
- Ensuring that only the most experienced elders made beehives so that the barks used were extracted in a way that favored conservation of the trees, the most common tree for this purpose being *Juniperus procera*
- Creating awareness on important species of trees like *Dobeya goetzeni*, *Olea euro*, *Olea hockstetteri*. Community members were prohibited from cutting such trees because of their medicinal properties.
- Allocating parts of forests to families and since blocks of forest represented the dignity of the family/clan governing it; conservation was topmost agenda for social prestige.

However, during the colonial period, the colonialists tried to evict them but without much success and that did not stop with post colonial governance. Since trouble started with these forceful evictions, the existence of the Mau forest complex has become increasingly threatened.

2.4.4 Total Reliance on Forests

In traditional Kenya people relied on natural resources for all their needs since

technology is just but a very recent occurrence. People used the forests for firewood, herbal medicine, building materials and so on. In fact, it is estimated that 530,000 households, about 2.9 million people living 5 km around forests depend directly on indigenous forests. In the context of Kenya's population as a whole this is about 10% of the population. Traditional medicine men knew all the herbs that could be of medicinal value and the parts of the forests where they grew and they were preserved for ages until modern medicine took over and everybody turned away from what came to be termed as a barbaric practice.

Recent trends, however, show that rural populations have reverted back to traditional medicine due to the rising cost of western medicine. An estimated 80% of the rural population relies on traditional medicine. Therefore, the number of medicinal plants used in Kenya is very large and the species vary by regions (Marshall, 1998). Again, the Ogiek community is a good example amongst others of people relying on forests for subsistence. It is worth noting that the paradigm shift from traditional to modern medicine brought with it a neglect of forests since their value was depreciating rapidly as more and more people turned to modern medicine. Now that the trend is reversing, the people continue to count their losses.

2.4.5 Fuel Wood

The use of firewood was the only source of fuel for domestic consumption but still, in the light of modern technology, it is probably safe to mention that it did not

contribute to the deforestation evident in some or rather most areas in Kenya today.

Dependence on fuel wood in rural Kenya is almost 100% and also about 80% of urban population relies on charcoal for domestic energy requirements (MENR, 1994).

Traditional practice was that only the snags and dead branches resulting from lightning strikes, diseases, and so on were gathered for firewood and trees were only cut down if they grew too close for productivity. For example a group of trees growing too close together would be thinned out to allow room for more productive growth and these practices led to a cultural way of forest management that surpasses any modern practices in place. From the same forests the people used their intellect to glean building materials without rendering the forests useless and desertification was put to check.

2.4.6 Intrinsic Forest Value

Finally, there is considerable evidence that the traditional Kenyan population had more value for trees than the modern population. For instance, glue comes in bottles properly packaged for convenience unlike the days when the Blue Gum tree, *Eucalyptus globules*, was the major source of glue in the form of resin. Also, gum Myrrh is very valuable for medicinal purposes in Kenya. It is also used as chewing gum and as incense. Needless to say, modern Kenya prefers candy from a store. Beds come ready made with springs and wooden frames unlike when people weaved their own from fibers and barks from trees and logs from unwanted trees amongst others. Paradoxically, it is this same technology that even plays a major role in deforestation behind the scenes and also adds to the pollution due to litter from packages.

The paper making industry is especially to blame for deforestation in Kenya alone. In 1990, paper and paperboard consumption was 130,000 tonnes with three quarters of it (93,600 t) supplied domestically. There are a total of six paper mills in Kenya making the country's pulp and paperboard industry one of the biggest in Africa and the most important among the Preferential Trade Area (PTA) countries with the largest company being Pan African Paper Mills (MENR, 1994). These mills have such great demand for wood than the country can provide but it is widely known, especially to the rural population that such industries are destroying our forests for profit gain. Ironically, the profits do not benefit the rural folks as most of them are used as cheap laborers in the mills and are onlookers as a few well placed individuals benefit from this enterprise. The point to be made is that there was so much at stake for the traditional Kenyan people that by destroying forests, they were indeed destroying their lives. That is not the case today as newer generations continue to lose their touch with nature. This is because children spend most of their lives in boarding schools and when they go home for the holidays, they are preoccupied by television and fashion trends propagated by western media. The ignorance about indirect causes of deforestation is baffling at the very least.

2.5 Population both as an Indirect Cultural Cause and also an economic factor in Deforestation

As already described, culture in Kenya has a direct impact on forests and by

extension, deforestation. Attention now shifts to another cultural practice that indirectly impacts forests and their survival. The African cultural tradition overemphasizes procreation in a marriage. There is no union between a man and a woman for its own sake; procreation, viewed as a gift from God, is meant to be fully utilized. The success of a man is equated to the number of children he is able to sire and ‘support to adulthood’ and then he can bask in the accolades of pleased community members for a job well done. Dismal indeed is the life of a man that has no children or has few of them because that is portrayed as cowardly or inability to provide and that propels every man to compete with his peers for respect in the community. This is especially so in traditional/rural Kenya.

According to an editorial in the Daily Nation (09/29/2005), “If women are empowered, then they can easily overcome the custom-bound barriers to their emancipation placed by men who count their wealth by the number of children they have sired, even when they cannot feed any.”

These dearly held cultural beliefs have led to the geometric population explosion that is evident in Kenya today and for this reason, the forests have been impacted tremendously mainly due to increasing rural populations that continue to grow despite increased rural-to-urban migration.

Table 1: Population growth from 1989 to July 2005

population 1989-08-24 census	Population 1999-08-24 census	Population 2005-07-01
21,427,000	28,686,607	33,829,590

Source: 2005 - [Central Bureau of Statistics](#), Kenya

There has been a population increase from about 21 million to 34 million in just 10 years despite increased death rates from diseases, drought, and famine (see Table 1). With this cultural nuance of “more is better” and of course modern medicine has greatly reduced infant mortality rates of the earlier times and thereby increased life spans, a whole cache of economical problems arise. That de facto norm opens a Pandora’s Box of economic complexities that have resulted in many changes in Kenya and more so in the conservation of forests.

While the population growth of Kenya continues to be blamed for deforestation, there have been studies that have been conducted that actually show the reverse to be true. An issue for future research would be to actually find out the real underlying cause of deforestation in Kenya. For instance, according to Chambers (1994) in his paper, *The poor and the environment: Whose reality counts?*, a paper prepared for the Conference on Poverty Reduction and Development Cooperation held at the Center for Development Research in Copenhagen, Denmark,

“With Agricultural intensification, it is hence not only possible to produce but also to protect more...” Chambers presents a four-stage population model for sustainability: the low-density stage (sustainable), the medium-density stage (environmentally degrading), the high density stage reaches a new sustainability equilibrium, whereas the fourth stage of overpopulation exceeds the biological limits.“ and in terms of empirical case studies, this means that scenarios have been identified of ‘more people, less erosion’ e.g. Kenya in 1994.” (Chambers, 1994. p 38)

As the population grows, there comes the demand for more resources to cater for the population explosion. On a small scale, this meant that more firewood for rural domestic consumption would be needed than the forests could naturally provide through natural processes like lightning fires and breakages due to strong winds and storms. As a result the need to survive saw trees being cut down to meet those demands. People had to expand their homes to bigger houses or even several houses in one compound which in some areas meant clearing off huge acres of forests for both building space and materials. For energy generation, more fuel wood would also be needed.

“On A study done on Kenya, The ‘Fuel wood Trap’ is combined with assumptions about tenure and access to resources: open access to state owned forests or to poorly managed forests commons tend to enable the over harvesting of firewood, supposedly often leading to deforestation.”(Wunder, p32).

Therefore, the so called commons and forests that fall in this category continue to be under threat from invasion resulting from overpopulations and also easy access to such areas probably due to the government laxity in patrolling them.

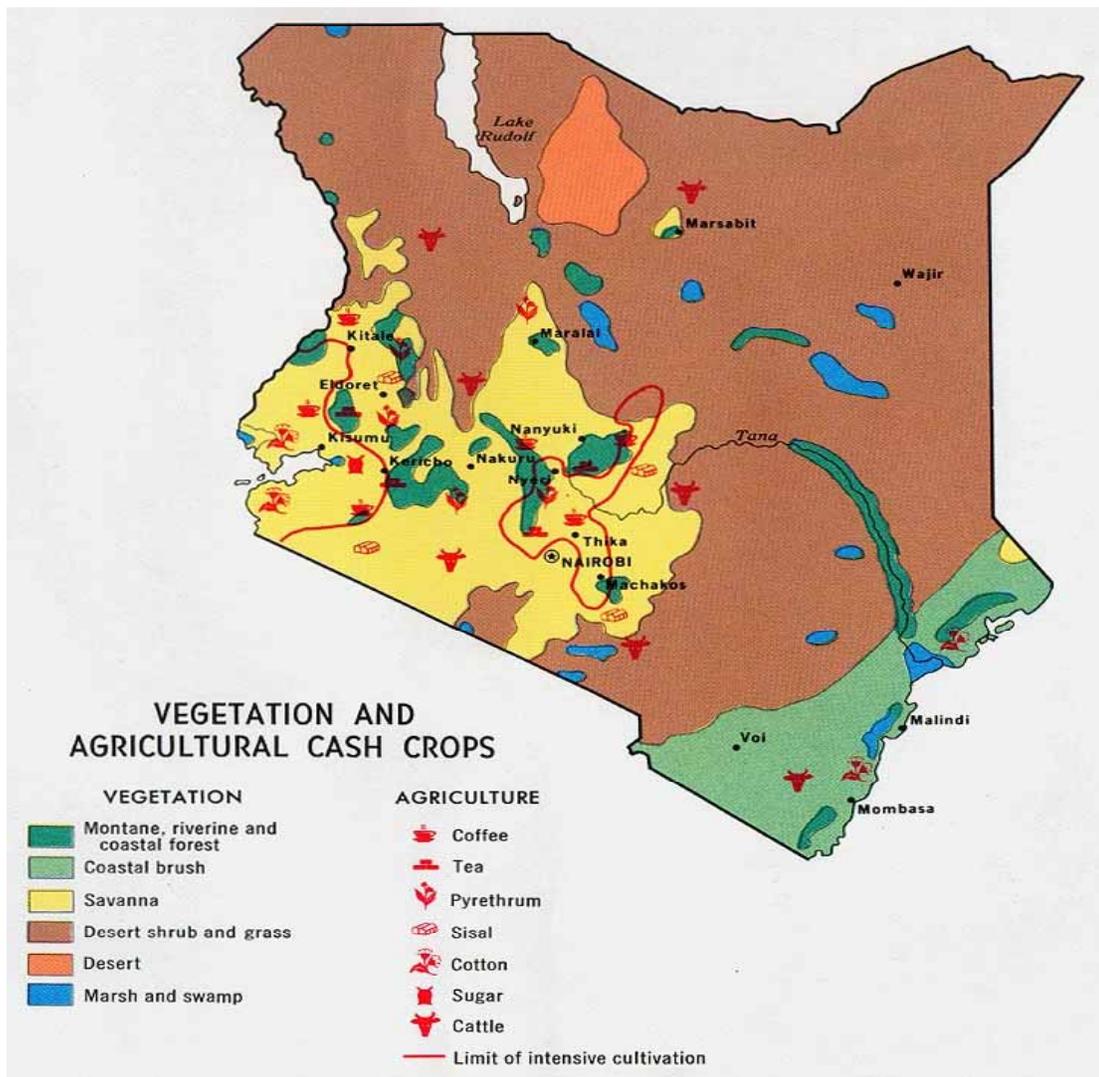


Figure 5: Economic map of Kenya

http://www.lib.utexas.edu/maps/africa/kenya_veg_1974.jpg

2.5.1 Economy is Agriculture-based

Kenya is largely an agricultural country with cash crops such as coffee, tea, pyrethrum, and cotton being the main earners of foreign revenue (see Figure 5). With approximately $\frac{3}{4}$ of Kenya's land being arid or semi-arid suitable for pastoralists only,

agricultural activity is limited to a very small acreage. Needless to say, drought which is a common phenomenon adversely affects the sector and as a result, the economic situation fluctuates annually depending on how well the cash crops do. Given the almost non-existent manufacturing sector, there is little to fall back on and the economy remains sfragile. So how does population growth compound the situation further?

According to Kenya Forestry Research Institute (KEFRI), population growth is the underlying causes of deforestation in Kenya. Fifteen million trees are lost each year worldwide due to agricultural impact. In the 1980s, Kenya's population grew at a rate of 4% per year leading directly to the invasion of rich forestland for cultivation.

As the population grew there was a need to feed the bigger population and hunting and gathering ceased to be the primary means of getting food. Much more food was needed and farming became the primary source of subsistence farming resulting in the quest for more farming land. As farming was practiced on a greater scale more trees were cut down and that trend grew with the insatiable appetite for land by the farmers. As the number of landless people grew, the government sought ways of solving the problem and this gave rise to the previously mentioned Nyayo Tea Zones. They were established in the Mau forest complex to give land to the landless while at the same time encouraging agro forestry. Those allocated the zones derived economic benefits from the sale of cash crops and also government subsidies to reforest. However, what started out as a poverty alleviation strategy yielded the worst form of deforestation that went undetected for long

as the government waited for the settlements to yield results but instead widespread poverty thwarted the project.

2.5.2 Farming Practices

The farming practices such as abandoning used land once its productivity was exhausted for more productive land like virgin forests further accelerated deforestation. The practices that were put into place at first as the agrarian system took shape in Kenya were meant to favor forest management and that was the case for a time but it proved to be an ephemeral endeavor in the wake of the population burst. In addition, judging by the demographic changes farming became more and more widespread and that meant that people were clearing land for farming regardless of the natural land cover present. As people looked further for more land more trees and flora were cleared to pave way for irrigation. This trend continues even today as more people are still logging. Farming is no longer for subsistence only; people grow food in surplus so they can sell the excess at local markets to augment their incomes due to an ever increasing cost of living.

2.6 Other Economic Causes of deforestation in Kenya

2.6.1 Social Ills

It is still a hazy distinction between land clearing for subsistence farming for provision of basic human needs to ensure survival and the dangerous vice of greed where land and consequently forests suffer under selfish intentions of a few well placed individuals who exploit for the sake of making monetary gains. Despite some studies

showing that some population growth can and has led to conservation of forests (Chambers, 1994) some other aspects are salient. Communities have invaded the commons regardless of the law of the land leading to other concerns like the recent land grabbing in Kenya that has included indigenous forests like the Karura forest (See Figure 6).



Figure 6: Karura forest: (http://www.accesskenya.info/maps_city_wnew_top2.asp)

Karura forest comprises a mere 2% of Kenya's land area. It is a closed canopy indigenous forest that harbors a disproportionately large percentage of the country's biodiversity, including woody plant species, large mammals, birds and butterflies. Karura

Forest, which borders the United Nations Environmental Program (UNEP) headquarters in Nairobi, was officially gazetted in 1963 when Kenya attained independence from the British. Its acreage is over 1,000 hectares and serves as a catchment area for four major rivers on the outskirts of Nairobi. The forest also acts as the air purifier for the city, helping to clear the air of the greenhouse gas carbon dioxide. (Ngunjiri , n.d)

One view is that destruction of indigenous forests is due to “de facto” excisions. As adverse weather conditions occur resulting in increased drought in Kenya that greatly affects the agricultural sector, forest resources become greatly exploited as people seek alternative means of income by burning wood into charcoal or selling it as timber. For example, in the Mount Kenya Forest Reserve, 2,465 charcoal kilns were discovered by the Kenya Wildlife Service (KWS) in an aerial survey in the August of 1999. (Kenya Wildlife Service, 1999).

However, a social ill of land grabbing took a hold of the country in the late 1900s and with it came the threat to confiscate the commons especially forest areas for private development. Karura forest was not spared and it probably elicited the worst standoff between university students under the guidance of environmentalist and Nobel Peace Prize winner Professor Wangari Maathai and the ruling party, Kenya African National Union (KANU). Communalism worked in the pre-colonial times and there were no demarcations for private property. However, the colonialists brought with them the right to own property and as the mad scramble for property took hold some common areas

remaining resulted in a struggle for access to the commons. This has had an impact on deforestation because people have access to the common areas without proper guidelines to control exploitation of natural resources.

Therefore land grabbing is not only politically motivated but also very much a communal affair with people refusing to advance with the laws of the land and pouncing on any land that seems “ownerless” with either positive or very drastic results. The main reason for land grabbing in Kenya is private development either by the local people or by foreigners driven by greed to get rich quickly but also, the comfort of property ownership has been cited on several occasion. The underlying concept is that monetary gain and poverty is largely to blame.

Still as the country tries to come into terms with conservation issues and what is best for the ordinary Kenyan citizens, “The Forest Bill 2005 awaits presidential assent. The implementation of the Ndung'u Report promises to restore gazetted forests wrongly alienated. Professor Wangari Maathai has fought hard to save Karura and other forests and won. The Aberdare Ranges are nearly fully fenced off.” (Gateria, 2005). This could be the beginning of change.

2.6.2 Wood Carvings

Another group of people having an impact on deforestation are the Kenyan

craftsmen who carve wooden carvings from hardwood and sell to tourists for income generation. As population continued to explode in Kenya people sought alternative means of making a living and a wood carvings trade sprung. In Kenya, the woodcarving industry supports up to 60,000 carvers over and above their families and suppliers. The industry generates an estimated US\$10 million especially in exports. This takes us back to the same threatened forests especially the hardwood trees that are favored for carvings. According to an article from Afrol news (03/26/2005), more than 20,000 trees are felled each year to sustain the wood carving industry and this is especially along the coast of Mombasa and Malindi. Until recently, replanting has been minimal.

As a result of this dangerous downward spiral trend, a certification project was put in place. The Forest Stewardship Council (FSC) certification was a result of collaboration by the handicraft industry, environmentalists, and farming societies. It encourages the use of farm grown trees instead of forest hardwoods for carving thereby ensuring that carvers maintain their livelihood while farmers benefit from the extra income. The carvings carry the FSC logo giving tourists and other consumer's assurances that they are not indirectly contributing to deforestation in Kenya. However before this was put in place, forest trees were bearing the brunt of greedy carvers. The extent to which this certification has helped curb deforestation would be an excellent research topic in the future given the newness of the project.

2.6.3 Social Capital

Social capital is important to sustainable forestry. When there is a positive relationship amongst people, firms, and societal institutions aided by acceptable norms and trust, then the society is said to be functional and social capital exists. Corruption which is widely defined as the exercise of public power for private gain is very prevalent in Kenya. It is not only a government shortcoming but it has roots in the communities themselves. Being a third world country, at least half of the people live below the poverty line and as a result are very highly prone to depravation should an opportunity present itself and this is not difficult to explain. According to Meyer, A., Kooten, G., and Wang (2003) in their publication, "Institutional, Social and Economic Roots of Deforestation: Further Evidence of an Environmental Kuznets Relation?" the following appears to hold some ground.

"There is some, albeit weak, evidence over the decade 1990-2000 that a country's ability to provide stable monetary policy and solid financial institutions with few restrictions on foreign capital transactions indicates economic agents in that country have weaker incentives to manage forestlands, having better ability to liquidate forest assets. Trust, measured as a 'control of corruption' index, appears to be a more important explanatory variable, particularly in the absence of income. That is, countries with less corruption (greater) trust are less likely to liquidate forest assets. Not unexpectedly, countries that have high rural populations are also more likely to deforest than those with lower rural populations.

Kenya as a third world country is no stranger to poverty and this being a national concern, efforts have been made to address it for example through the National Poverty Eradication Plan (NPEP) launched stipulating the strategies to alleviate the situation between 1999 and 2015. However, as the country grapples with poverty other macroeconomic policies confound the situation even further. While the actions of the Breton woods institutes like the World Bank and the International monetary Fund (IMF) are well directed they sometimes adversely contribute to deforestation although in an oblique way. A good example is the situation in Kenya with foreign aid frozen until compliance to IMF policies is satisfied. One of the most pernicious stipulations was the cut back on the number of civil servants in the late 1990s resulting in massive retrenchment of government workers with the goal of reducing international debt and facilitating repayment. Lump sum amounts of money commonly dubbed the 'Golden Handshake' were also used to bribe people to accept early retirement but it was hardly enough to sustain life.

As a result, hardworking Kenyan citizens soon became jobless and returned to the rural areas to fend for themselves. Needless to say, logging escalated as forests became quick, ready and easy sources of income. According to Lynette Obare and J.B Wangwe (n.d.) in 'Underlying Causes of Deforestation and Forest Degradation in Kenya', the World Bank imposes structural adjustment programs that overemphasize economic solutions to the detriment of sustainable environmental conservation thus encouraging massive forest land exploitation. Since the World Bank and the International Monetary

Fund (IMF) influence the global economy through the measures they put in place, their decisions determine the kind of economic plans nations adopt and consequently, local communities derive their economic activities from those plans. Once again, massive retrenchment of workers in Kenya in the late 1990s is a good example of macro-economic policies by the World Bank.

2.6.4 International Trade

Global trade has also had adverse effects on deforestation. As the developing countries continue to provide raw materials to developed countries and also overemphasis on export for much needed foreign income earnings, forest degradation continues to occur. According to Meyer, et al, (2003) in their publication ‘Institutional, Social, and Economic Roots of Deforestation...’ Agrarian communities (like Kenya) are marked by relatively high levels of rural population. The main source of employment in these societies is agriculture as opposed to forestry. However, it can be expected that such countries with such high rural populations have high agricultural output and also higher rates of deforestation. Forests continue to be cleared to pave way to large scale farming for export (see Figure 7).

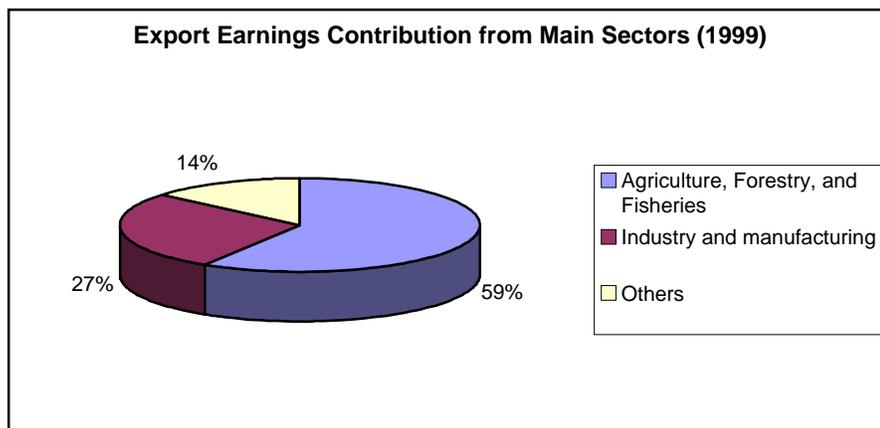


Figure 7: Export Earnings in Kenya, 1999: *Adapted from Gichere, 2001*

Lynnette Obare and J.B.Wangwe (n.d.) in an effort to demystify the underlying causes of deforestation in Kenya outline the following as the economic incentives in favor of forest degradation:

1. The global economy is capitalistic in nature. As a result, universal trade and market dynamisms influence commodities to be produced for export with an aim to compete for the best prices in the global market.
2. Manufacturing industries in the developed world import very cheap raw materials from developing countries. Some of these materials are obtained from forests.
3. The forest department in Kenya still practices traditional forestry of conservation by strict control of fire and grazing by the nomads, and denying private rights in gazetted forests. The main reason for lack of change from traditional to more contemporary forest management techniques is to accrue economic benefits from the forests.

Table 2 highlights some of the economic contributions of environmental resources

Table 2: Environment and the Economy: Key Statistics

Economic Contribution of Environmental Goods & Services	
Gross returns to national economy from wildlife	- \$350 mill/yr
Consumer Surplus from Protected Areas	- \$450 mill/yr
Value of forest use to local households	- \$94 mill/yr
Value of forest watershed catchment protection	- \$50 mill/yr
Expenditures on forest and wildlife conservation	- \$2/ha/yr
Costs of soil erosion to crop yields	- \$20 mill/yr
Cost of agro-chemical poisoning	- \$20-\$890/ha

Source: Emerton, 2001

2.6.5 Limited Funds

The most important economic factor that affects forestry and hence facilitates deforestation in Kenya is lack of funds to practice sustainable conservation. According to Emerton, Karanja, and Gichere. (2001), there is very little information about the actual value of Kenya's environmental resources and also the costs linked to environmental degradation. That lack of knowledge about the worth of the environment may be the explanation supporting some of the decisions made regarding forests in Kenya (see Figure 8).

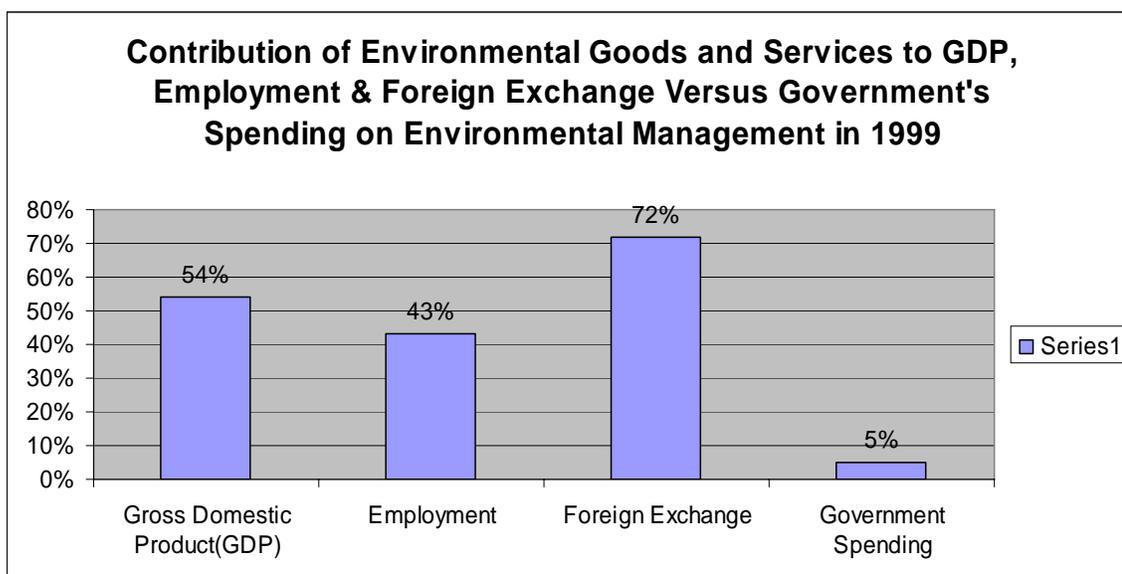


Figure 8: Contribution to GDP: *Source: Gichere, 2001*

Figure 8 above shows that the government clearly parses out funds for conservation compared to the income generated from it. As a result of a restructuring process to trim the public sector motivated by both local situations and International organizations like the World Bank, the Kenya government does not allocate enough funds to the environment sector due to budgetary constraints and it could be argued that there are other hot issues like Education that need to be funded but that does not explain this trend in totality.

According to Obare and Wangwe, (n.d.) the Forest Department, which is, the government wing charged with forest management has its shortcomings too. First of all, the policies are outdated and in no way aligned with the current economic situation. Also the department charges very low logging fees and this may be the motivation behind

excessive logging by the saw millers. Secondly, due to retrenchment there are very few workers to enforce rules and regulations and logging continues unchecked. For example, the department is supposed to earmark sections of forests that are suitable for logging but due to limited personnel, saw millers select trees based on their interests regardless of whether they are mature or not and then approach the forest department for permits. Since they obtain permits to log in area unchecked by the Forestry department, they are essentially not breaking any laws and deforestation continues. The situation is further complicated by lack of machinery and staff who are trained in outdated forest management techniques. Budgetary limitations hinder modern training.

Whatever the causes of deforestation are in Kenya, the situation of the forests seems to be receiving a lot of international response triggering reactions such as this:

“Klaus Toepfer, Executive Director of the United Nations Environment Programme (UNEP), said that he was concerned about the risk of increasing deforestation in Kenya. He was responding to media reports that some 68,000 hectares of remaining indigenous forests, including those in part of the Mount Kenya forest reserve, may be cleared to settle landless people. In recent years the rate of global deforestation has been running at three to four per cent of the earth's forest cover. UNEP has also been working with regional organizations, such as the African Ministerial Conference on the Environment, to try and help countries manage their forests sustainably. Despite these high-level initiatives, millions of hectares of forest continue to be cleared annually, (UNEP, 09/13/2005)”

Chapter 3

Results

From the information gathered on the contributing factors of deforestation in Kenya, it is clear that culture and economy play a major role in the deforestation arena. There is no need to further emphasize the impact deforestation can have on human lives all over the world. Kenyan environmentalist Wangari Maathai, who has been in the forefront of this battle to save forests in Kenya, points out some long term effects of a rampant deforestation policy such as famine, hunger, diseases as a result of pollution, shortage of electricity and water. "The negative impact of the ongoing destruction of the forests and ecology is slow, and we may be considered alarmists," she cautions; "but it is real and we will have to face it when it comes." She adds that the drying up of Lake Nakuru, in the Rift valley, famous for its water birds such as the flamingoes, are sure results of the degradation of the forests in the country. "The wetlands of our country will have no water, and future generations will be unable to grow food." (Ngunjiri, P., n.d)

While there are substantial economic and cultural factors affecting deforestation in Kenya, The following factors seem to have the greatest impact:

3.0 Poverty

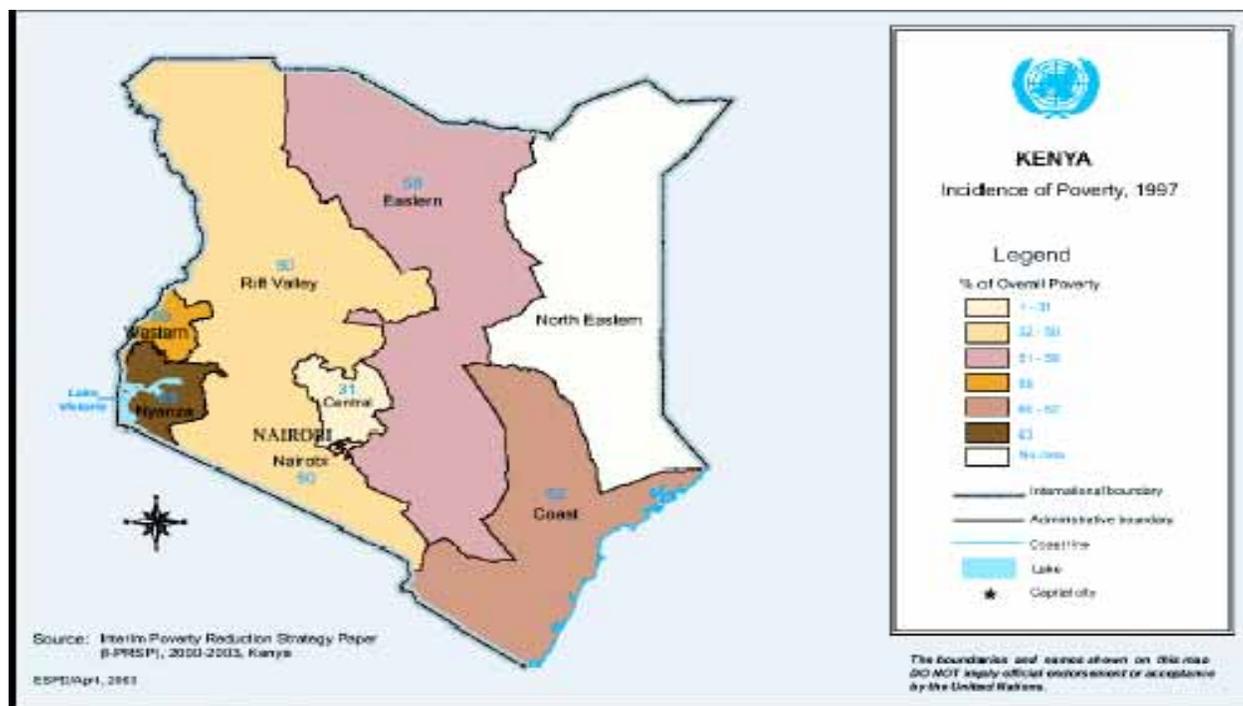
The poverty situation in Kenya is profound. The ability to earn a livelihood is an essential part of all human life which is measured by such indicators such as per capita

GDP, household consumption levels and so on. According to UNEP, poverty line are then drawn based on the cost of food and non-food basic needs both for individuals and families at large so people needing government support can be identified. Unfortunately for Kenya, the poor population is more than half the entire population and the number of income poor is estimated at over 17 million (Kenya, 2004).

Although agriculture provides 70% of Kenya's employment and supports over 80% of the poor rural folks, it only contributes just a little over 25% of the GDP (World Resources Institute 2003b, Kenya 2000). While it is the rural poor people that cultivate and grow cash crops, the non-poor are the ones that make more money from the sales as they are better equipped for trade especially at international level. Needless to say, women are the poorest in addition to the landless, small-scale farmers, pastoralists, casual laborers, HIV/AIDS orphans, and street children (Kenya, 2000)

The map below is evidence of income poverty disparities with Central province having the wealthiest population and Nyanza province being the poorest. Central province that encompasses the Nairobi area has the top 10% of the wealthiest households commanding 42% of the wealth.

Figure 9: Kenya: Incidence of poverty by province



It is no wonder then that over reliance on agriculture and wood fuel has resulted in deforestation and increased poverty in the rural areas of Kenya especially Western, Coast, and Nyanza provinces. Their over-reliance on wood fuel and charcoals as their only sources of energy is unsustainable and alternative sustainable biomass energy may help curb the problem of deforestation and improve internal renewable water resources level.

According to Bojo and Reddy (2003) in their article, "Mainstreaming Environment in Poverty Reduction Strategies," about 1.2 billion people live in extreme poverty. Of those living in extreme poverty two-thirds of them are in Asia, and one-fourth in Sub-Saharan Africa (Data from the World Bank 2002). Table 3 shows how

poverty changed in Kenya in the years between 1992 and 1997.

Table 3:Poverty In Kenya (percentages)

	Province	1992	1994	1997
Rural	Central	35.9	31.9	31.4
	Coast	43.4	55.6	62.1
	Eastern	42.2	57.8	58.6
	Nyanza	47.4	42.2	63.1
	Rift Valley	51.5	42.9	50.1
	Western	54.8	53.8	58.7
	North Eastern	–	58.0	-
	Total	47.9	46.8	52.9
Urban	Total	29.3	29.0	49.2

(Data from the World Bank, 2002)

From the table above, there is a marked increase in poverty with the exception of rural Central. This trend can be largely explained by idiosyncratic factors like HIV/AIDS and endemic diseases like malaria resulting in loss of breadwinners and the majority of the population being orphaned children who are incapacitated in terms of contributing to the economic growth of the country. In a nutshell, there are more dependents than labor force growth causing severe economic problems. Also there is a tremendous increase in poverty in urban areas and that can be attributed to increased rural-urban migration. More people flee the rural areas for major cities hoping to end their poverty by working in the cities which has proved to be an exercise in futility as people with dashed dreams end up in slums and other shanties in urban areas contributing further to urban poverty.

As poverty continues to ravage the region, deforestation continues to spread. According to a report on Kenya (<http://www.mongabay.com/kenya>), Kenya has very little rainforest (mostly montane forest) cover, and these scattered patches are being further diminished for fuelwood and building materials by an exploding population (over 3% growth rate). They are also threatened by increasing felling of trees for timber and agricultural expansion.

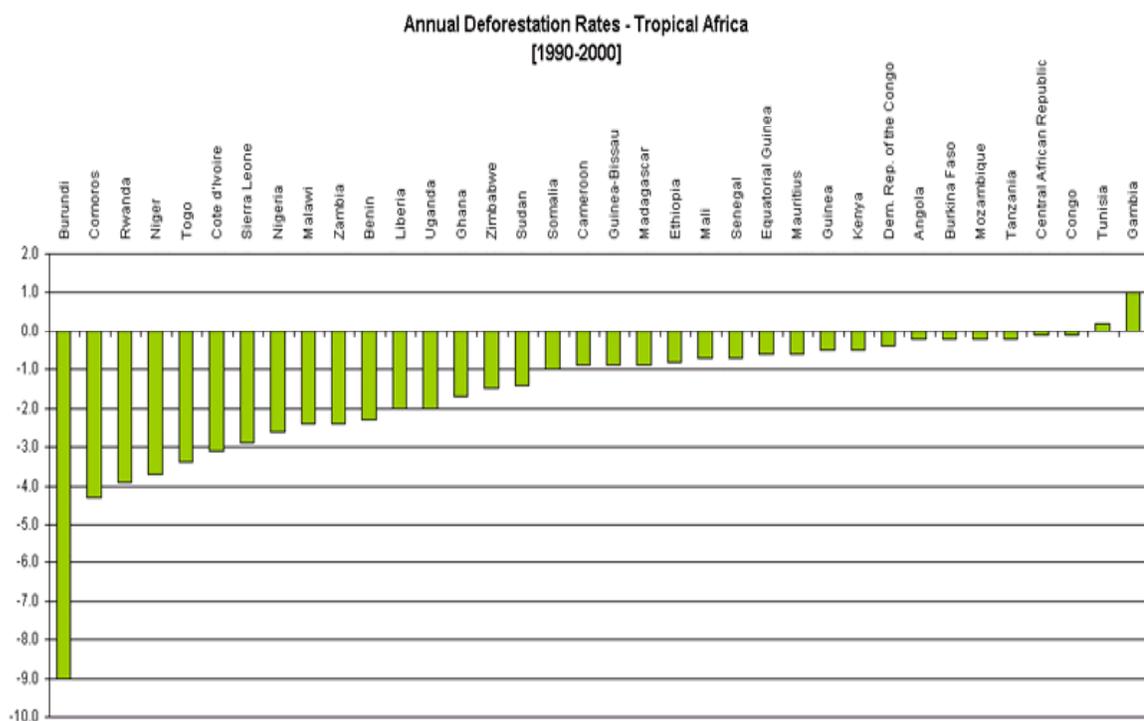


Figure 10: Annual Deforestation Rates:
(http://www.mongabay.com/images/charts/rates_africa.jpg)

The above data clearly shows that deforestation is a real threat in Kenya and Africa at large and therefore, we cannot continue to ignore that deforestation needs to be curbed. Further still, Table 4 includes two other East African countries that share a border

with Kenya and a projection of the future of forests in East Africa. While this study is focusing on Kenya, it also helps to show that by not curbing deforestation at home, we are endangering the survival of our planet since other countries are also gradually deforesting. Appropriated carrying capacity is thus eliminated and that serves to make the issue of reforestation even more urgent.

Table 4: Status of Forests in East Africa

(Forest Futures, Tom Gardner and Robert Engelman).

Country			1980	1995	2025
	Forest Area (thousands of hectares)	Population (thousands)	Per capita Forest Area (hectares)	Per capita Forest Area (hectares)	Per capita Forest Area (hectares)
Kenya	1358	16632	0.08	0.05	0.03
Tanzania	38004	18581	2.05	1.09	0.42
Uganda	7011	13120	0.53	0.32	0.10

With Kenya's population currently approximating 33,829,590 (CIA, World Factbook, Kenya), then it is easy to project the situation of Kenya's forests in 2025.

3.1 Farming Practices

There is evidence of mediocre farming practices in Kenya that emanate from the country's economy being largely based on agriculture but very little knowledge of sustainable farming practices especially by the rural farmers that make the bulk of the farming community. According to Pagiola (1995), in addition to these poor farming practices the government of Kenya controls the prices of agricultural products severely

cutting any incentives to the poor and rural farmers that may encourage proper farming practices. As a result, in a bid to maximize output for a greater income, land is over utilized.

Figure 11 helps to elucidate how farming and deforestation are intertwined.

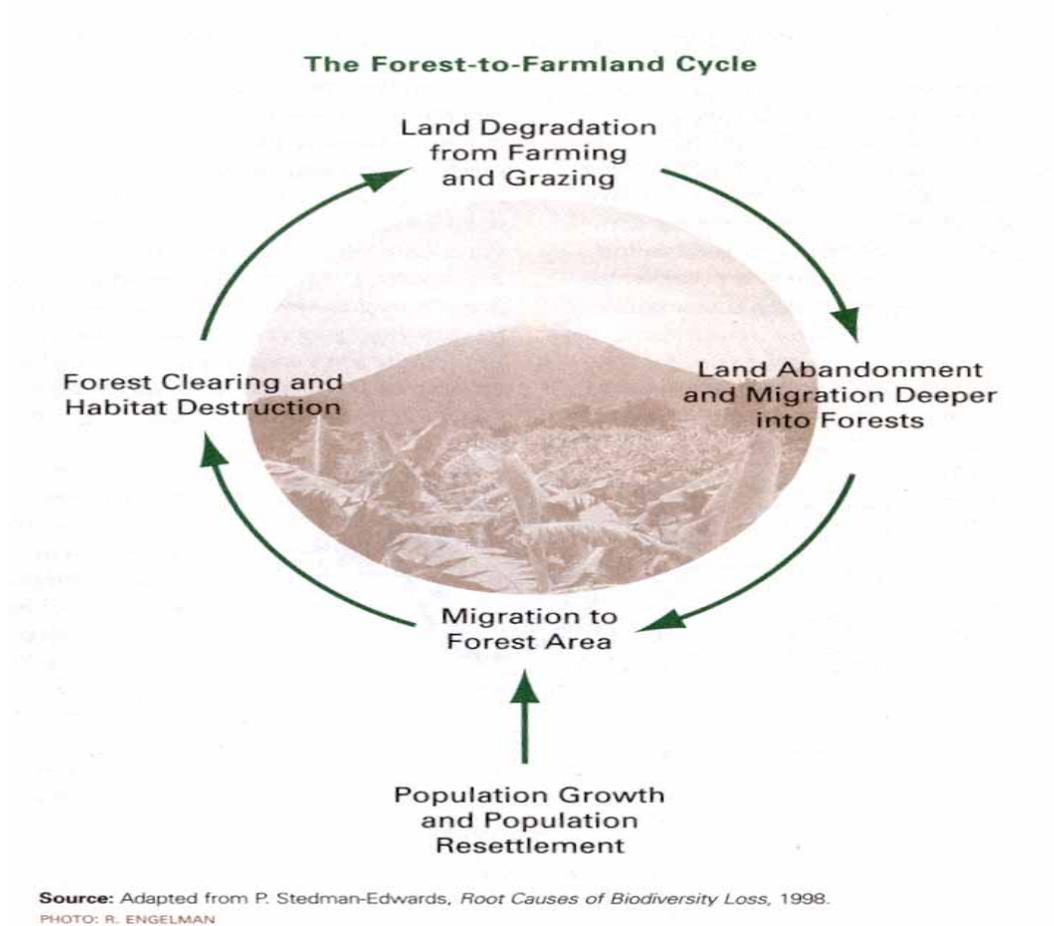


Figure 11: Forest-to-Farmland Cycle

According to a recent study done by UNEP and IISD (International Institute for Sustainable Development),

http://www.unep.org/dpdl/poverty_environment/PDF_docs/kenya_ecosystems.pdf

Small-scale farmers make-up 80% of the active agricultural farmers in Kenya and generate most food. Despite the natural constraints to food production like erratic rainfall, steep slopes, and low soil suitability, deforestation caused by agriculture, timber industries, and power generation results in even lower agricultural output. This is a Catch-22 situation with farmers exploiting land and forest area for better yield but the resulting deforestation actually resulting in lower crop yield.

Some of the poor farming practices that continue to be exercised are cultivation on slopes, planting wrong crops in the wrong places, over use of a specific piece of land resulting in poorer crop yield every year and as a result, abandoned land. As noted earlier there is a need to maximize output for the sake of profit-making. For example, according to Lou Verchot, lead scientist for Climate Change and Soil Fertility with the World Agroforestry Centre (ICRAF) in an article on *Restoring Kenya's Degraded Land* (http://www.worldagroforestry.org/ar2004/te_story02.asp), over 50% of abandoned land in western Kenya is due to poor farming practices. The people are not starving because they continue to grow maize for consumption and as long as they are growing food, it remains a vicious cycle. However, since they don't make any profits they do not invest in their land and they continuously move on to fertile forest land for better soils tremendously impacting deforestation.

The Kenya Agricultural Research Institute (KARI) is currently working on a

project to better manage the ecosystem by finding ways of rehabilitating large areas of degraded and abandoned areas. One way stipulated is planting of trees by farmers in their land. While trees reduce global warming through sequestration of carbon dioxide, unfortunately, the very abstract nature of this process makes it very irrelevant in the face of income from farming however meager. People favor monetary gain and thus, one of the proposed incentives under tree planting will be an opportunity for farmers to be able to sell their “carbon credits” to countries that need to meet their national CO₂ reduction targets agreed upon under the Kyoto Protocol. The benefits of reforestation will be a healthy environment and better farming land since trees increase soil fertility and water holding capacity.

3.2 Trade

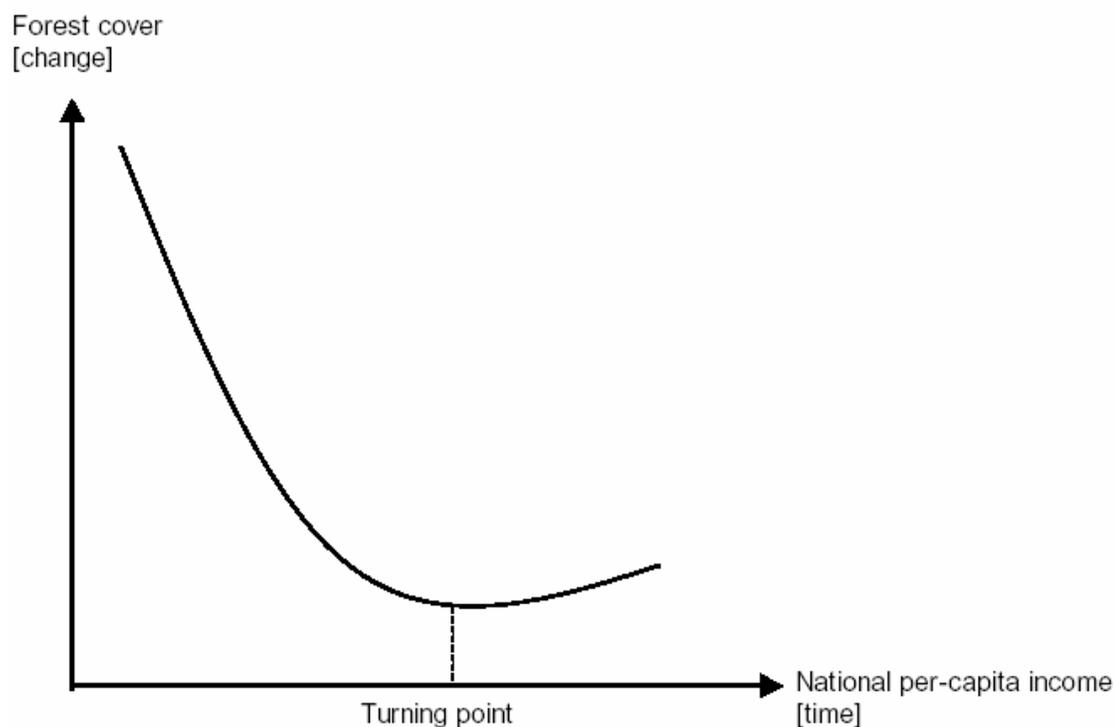


Figure 12: An Environmental Kuznets Curve (EKC) for forests

Source: www.worldagroforestry.org

An Environmental Kuznets Curve is an "inverted U" relationship between a country's per capita income and some measure of environmental degradation. Environmental degradation first worsens during the course of economic growth and then later improves, (www.agtrade.org/glossary_search.cfm).

The two major foreign exchange earners in Kenya remain tourism and wood carving. As more and more tourists continue to flock to the country to see its wildlife, the locals continue to cut down hard wood trees for large scale wood carvings meant to be exported to developed countries and also for local sales to tourists who buy them at exorbitant

prices. It has previously been argued that as trade and especially international trade increases, the resulting wealth has been seen to draw more and more people to the cities and away from the forests and thus reducing deforestation by concentrating people in urban areas as they pursue other money-making ventures. This was very evident in Kenya in the early 1980s as tourism boomed. However given the fact that agricultural exports continue to elude the local farmers, the quest for a reliable source of income has seen dramatic shift from agricultural products to wood carvings. Several factors contribute to this trend:

1. The erratic weather conditions in Kenya leave little hope for the small scale farmer because the uncertainty of whether there is going to be a substantial harvest remains. This uncertainty is fertile breeding ground for other economic ventures or alternatives.
2. The price of agricultural products in Kenya is largely determined by the government. The farmers grow cash crops that they sell to the government. The government then is in charge of exporting to the developed countries and paying farmers their dues. However, due to the numerous middle men and other obscured factors involved the earning from these cash crops are meager for the farmers resulting in increased poverty. For example the growing of tea and coffee in Kenya has the farmers working long hours but the getting very little income from the government despite continued success of export sales of these crops. Consequently, farmers are abandoning farming for more economic oriented endeavors where there is direct income between buyer and seller without the

middle men.

3. Wood carvings and hand crafts are usually done on an individual basis with traders selling directly to the numerous visiting tourists and also exporting to the developing industries. As a result, the income is higher because the people can control it to their own benefit. This then becomes more and more attractive to the poor people. In fact, as noted in an earlier chapter, the wood carving industry generates approximately US \$10 million in exports, supporting over 60,000 carvers and their families. In this process, at least 20,000 trees are felled each year.

While tourism generates most of Kenya's foreign income, there is no evidence of a direct link between tourism and deforestation. Tourists simply come to see wildlife and while ecotourism has its effects on the environment, deforestation is not usually linked to it. However, there is an indirect contribution to deforestation through tourism because the local people only became aware of the importance of carvings through the activities of tourists while in the country. As a matter of fact, the same tourists collaborate with locals to facilitate exports back to their home countries. As it becomes more and more lucrative to sell curios and carvings for export, then more and more trees are felled to satisfy the demand.

A closer look at the trend of major industries driving Kenya's economy depicts a journey that kicked off with agriculture as the main foreign income earner. Cash crops were grown for export but due to corruption in the government, less and less money went

to farmers as compensation for the crops. Even though agriculture still remains a key player in export earnings, the poor rural folks have mainly abandoned it for more lucrative businesses and large-scale farming is now mainly practiced by government and private companies for their own gain. Tourism then became more pervasive in the country due to improved infrastructure than it was before and many people moved to the cities to set up tour companies and also market unique African arts to the foreigners. With the influx of tourists also grew the wood carvings and handicrafts industry.

In a nutshell, according to researchers (www.wrm.org.uy/deforestation/background.html), trade in Kenya both national and international has resulted in scenarios that contribute to deforestation, for example:

1. Unsustainable extraction of forest products e.g. felling of hardwoods for wood carvings.
2. Substitution of forests by other systems of production especially those aimed at international market, such as plantations and cattle raising in Kenya.
3. Rising consumer demand resulting in unsustainable consumption patterns of a wide range of products that are extracted from forests or from other productive activities that would substitute forests. Again, wood carvings and handicrafts in Kenya are a good example.
4. Undervaluation of forest products through the externalization of environmental costs.

3.3 Western Influence

Western Influence is closely linked to trade and the economy because these are the areas that the international community greatly shapes in Kenya. This international presence is manifest through the presence of a myriad of Non-Governmental Organizations (NGOs) and the macro-economic policies of the Breton Woods institutes (IMF and World Bank). Needless to say, a third world country is mired in economic hardships and any international help or intervention is viewed as a solution to the lingering economic hardships that hinder conservation but more importantly, encourage deforestation.

3.3.1 The Role of Non-Governmental Organizations (NGOs)

A Non-Governmental Organization is an organization that is independent from the government. Although the definition can technically include for-profit corporations, the term is generally restricted to social and cultural groups, whose primary goal is not commercial (Definition by Wikipedia, <http://en.wikipedia.org/wiki/NGO>). According to the Peace Corps, http://www.peacecorps.gov/library/pdf/m0070/M0070_mod1.pdf, an NGO is distinguished by these characteristics:

1. Voluntary
2. Independent
3. Not-for-profit
4. Not self-serving in aims and related values.

While different NGOs work on different issues, one most important role is building “social capital.” They create opportunities for trust building and increase in the capacity

to work together for a common goals. In fact, it is documented that Kenya alone has over 600 NGOs. http://cms.isn.ch/public/docs/doc_248_290_en.pdf

Many of the programs to protect the environment in Kenya are carried out by NGOs. There are both local and international ones. The most salient local NGO that directly deals with issues of deforestation in the country is the Green Belt Movement headed by the winner of the 2004 Nobel Peace Prize, Professor Wangari Maathai. The organization has seen a lot of growth in the path towards fighting deforestation in Kenya. The international NGOs also play a major role in bringing in the much needed resources to aid a third world country towards this most important reforestation path. However the approach they use is somewhat transplanted from the western way of life.

There is an increasing shift from anthropocentric to a biocentric perspective, an approach that could have serious problems for a third world country. According to Ramachandra Guha in “Radical American Environmentalism and Wilderness preservation: A Third World Critique” the over-emphasis of preserving biodiversity to the detriment of human needs is harmful to developing countries in the following ways:

1. Tends to benefit the rich and deprive the poor.
2. It leads to a neglect of more pressing environmental problems.
3. It encourages imperialistic yearnings of western conservationists.

Since Kenya is a densely populated country with a huge agrarian population that

has a sensitive relationship with nature, the setting aside of wilderness areas has resulted in the transfer of resources from the poor to the rich. Consequently, the numerous game reserves and parks in Kenya, juxtaposes the interests of wildlife against those of the poor farmers living in the vicinities. The impetus to set up the parks came from local elites in Kenya and international agencies such as the World Wildlife Fund (WWF) and the International Union for the Conservation of Nature and Natural Resources (IUCN) with an aim of transplanting the American system of national parks to Africa. In no instance have the needs of the poor local people been taken into account and these parks are mainly managed for the rich tourists. This notion of preservation of wildlands is what has been identified by governments and the conservation elites as environmentalism. Consequently, the environmental problems that have a far more direct impact on the lives of the poor for instance, fuel, water shortages, soil, air, and water pollution have not been addressed while championing parks for tourism. The poor left to fend for themselves continue to deforest to earn a living through subsistence farming and wood carving industry.

So how does deforestation fit in all this? According to Ramachandra Guha (1989) in, "Radical American Environmentalism and Wilderness preservation: A Third World Critique," national parks in the US "provide an opportunity for respite, contrast, contemplation, and affirmation of values for those who live most of their lives in the workaday world." America being the vast, sparsely populated nation it is, the parks work well for those seeking a bond with nature because civilization and wilderness co-exist

harmoniously. However, in Kenya, a poor country, this 'full stomach' nature of environmental preservation can only be practiced by the rich, urban and sophisticated. If the country can evolve economically and intellectually to a point where conservation is viewed as more than a money-making venture, then the numerous NGOs especially the international ones will be effective in curbing deforestation. Only when the needs of the locals who are struggling for survival are met that deforestation can begin to be checked. Then an environment Kuznets Curve will be more apparent. In the meantime, deforestation continues unabated.

3.3.2 The Breton Woods Institutes

The World Bank and the International Monetary Fund (IMF) continue to have a huge presence in Africa and have helped shape Kenya in a positive way although some results have proved detrimental to the deforestation battle.

In the late 1980s, it became necessary for the Kenya government to downsize the size of its civil service due to the cost of government. Progress was slow, however, and in 1991, the IMF and the World Bank froze aid to Kenya in order to back their demands for political and economic changes. The economic situation worsened and the inflation rate at the end of 1992 was estimated at 30-40% (World Bank, 1992). This led to a few changes in Kenya but perhaps the most significant one was the creation of a multi-party state. Despite continued efforts by the Kenya government, on March 15, 1993, the donors refused to lift sanctions completely citing the following reasons:

1. Inability to shrink the costly civil service
2. Fixing prices on farm produce by the government
3. Non-privatization of state owned enterprises.

At this time, the Kenyan population was 24 million people and about a quarter of a million people in the civil service. Excessive staff at lower grades (A-G) in Kenya would be given the Golden Handshake to leave the workforce and set up their own businesses or look for employment in the private sector. What this would achieve is a smaller civil service without wage compression, increased output and morale.

Perhaps, the greatest shortfall of this process was that workers were sent off without any training in self-employment and after their Golden Handshake had been depleted, they started seeking other ways of earning a living. Since a majority of Kenyans only live in Nairobi in order to work, after retirement most people relocate back to the rural areas and this was what happened to those who could not find employment in the private industry in urban areas (www.humaninfo.org/aviva/ch33/.htm).

As mentioned previously, deforestation resulted from workers relocating back to the rural areas to farm and also those that decided to engage in the very lucrative woodcarvings industry. As a Kenyan, I first started to notice the influx of curio shops when I graduated from high school and this was around the same time the civil service was being downsized to meet the IMF and World Bank stipulations for reforms in the economy and government. Although a direct link between retrenchment and deforestation is hard to measure, the process undoubtedly set the pace for the urban-to-rural migration

that resulted.

A good example of deforestation is the Ebony tree (*Diospyros melanoxylon*), known more accurately in Swahili as mpingo, which is a valuable African Blackwood for a variety of uses, (<http://www.american.edu/TED/ebony.htm>). The international commercial demand for this tree comes primarily from Europe, the US, and Japan, where ebony, known as the "Tree of Music," is used to make the finest woodwind instruments. It is the most desired wood to make clarinets, oboes, and bagpipes for professional musicians. Due to its high demand, ebony is sold at a price of 12,000 pounds (approx. \$17,000) per cubic meter, making it the most expensive timber per volume in Africa.

Ebony is also a major source of income for the tourist industries in Kenya and Tanzania, where beautiful and intricate wood carvings of wildlife and cultural themes are very popular among tourists (see Figure 13). Carvings are sold at an initial price of \$1,000. An estimated 60,000-80,000 wood carvers in Kenya make their living from this industry alone.

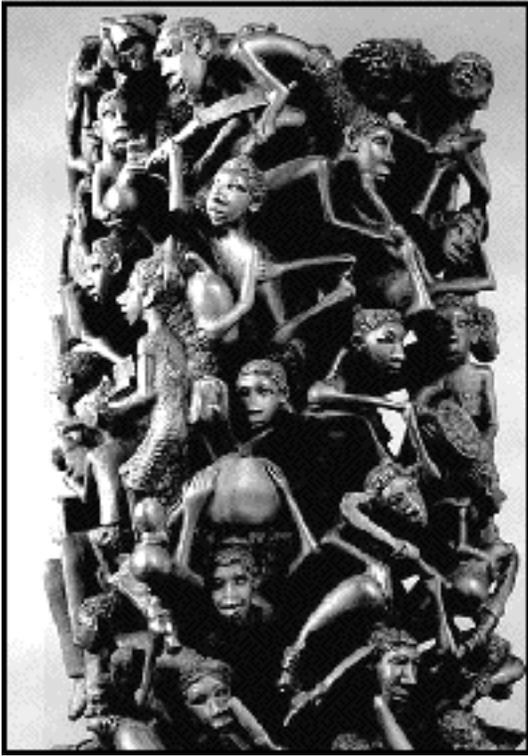


Figure: 13: "Tree of Life" carving (<http://www.american.edu/TED/ebony.htm>)

This unusually hard and dense wood has several different uses for the local people. Because of its hardness, it is valuable for making durable utensils and tools for the local people (such as hoes). It is also a very high-energy yielding fuel, which makes it ideal for making charcoal. With the high demand of ebony from the international, national, and local level, some 50,000 ebony trees are cut down in Kenya every year. There are only a few pockets of ebony forests left in Kenya, with slow and inadequate action in replanting the tree. This just one case of a single species of a tree, other trees continue to be endangered for profit gain.

Chapter 4 Discussion

Deforestation causes a reduction in forest canopy which acts as water catchment area and as a result there is flooding during the heavy rains season and drought during the dry season because there is little forest cover. This is very evident in the mountainous regions of Mount Kenya, The Aberdare Range, The Mau Escarpment, Mount Elgon, and the Cherangani Hills which account for three quarters of the total indigenous forests in Kenya.

This has also impacted farming especially for tea farmers. Since trees regulate day and night temperatures, there is a risk of temperatures falling below zero Celsius and killing crops. The resulting soil instability too, is very detrimental to agriculture in general. “The extensive destruction further manifests negative long-term impacts such as disrupting wildlife habitat and destroying biodiversity. In turn these are likely to lead to impaired tourism development. While savannas are home to the more familiar wildlife species that attract tourists, forest ecosystems provide the habitat for a large proportion of the country's biological diversity.” (www.afrol.com)

Environmental conditions have a significant impact on the livelihoods, health and security of poor people. About three-quarters of the poor in developing countries live in rural areas, and often derive a significant portion of their income from environmental resources. Scraping out a meager living, they are also disproportionately affected

by droughts, floods, pest infestations, hurricanes, earthquakes, and landslides and have limited ability to cope with such calamities. On average, about 19 percent of the illness and death in developing countries is associated with environmental factors -unequal access to safe water and sanitation, vector-borne diseases, indoor air pollution and exposure to toxic substances. In Sub-Saharan African the proportion is much higher, approximately 27 percent. (Monga Bay, n.d.))

Those are just but a few negative impacts that deforestation can have on the quality of life of both plants and animals, the end results of this deforestation are indeed dismal. First it is important to identify the key problems affecting forest conservation in Kenya. From the findings of this case study, a few key issues are prominent:

1. The state of Kenya's forests continues to decline unabated.
2. There is evidence that the population burst that continues to grow at an alarming rate has a profound effect on the conservation efforts in the country. There are more people in Kenya than the land can support sustainably and carrying capacity has been exceeded.
3. Poverty also continues widening the gap between the rich and the poor such that if nothing is done to check that trend, the results would be quite catastrophic on the deforestation battle.
4. A paradigm shift from a biocentric approach to a more anthropocentric one in environmental conservation is beckoning until a happy medium is achieved.
5. Finally, Kenya needs a stronger forestry bill

4.1 The State of Kenya's Forests

The impetus to conduct this study came from the realization that deforestation in Kenya is at all time high despite major conservation efforts being put into place to ensure that this trend ceases. As first mentioned in the introduction, Kenya's forest cover was originally limited with the country's closed canopy forests covering 1.24 million ha which is just about 2% of the country's total land area, (KIFCON ,1991).

FAO estimates that between 1990 and 2000, Kenya lost 931,000 ha (93,000 ha/annum) of its forest cover (FAO, 2001). According to a recent editorial, the Food and Agriculture Organization (FAO) warns that Kenya is one of the key forest destroyers contributing to Africa's net loss of forests exceeding four million hectares per year between 2000 and 2005(Daily Nation, 04/04/06)). It is therefore quite clear that there are lesser trees with each passing day and repercussions are already manifest in droughts and famine and reduced rainfall due to the destruction of water catchment areas.

After scrutinizing a number of the cultural and economic aspects of deforestation in Kenya, it is obvious that different factors have their own contribution to deforestation or reforestation in some instances, but some of those factors have a greater influence than others and it seems that economy and its embedded aspects are largely behind the problem. Before there were serious economic problems in Kenya, cultural practices

existed since time immemorial and the traditional folks co-existed mutually with forests. However, the cultural religious belief in procreation has proved to be one practice that has greatly altered the demographic trends in the country and continues to despite high awareness that we have exceeded our carrying capacity and most resources are non renewable or renewable over lengthy periods of time and this protracted regeneration results in really low supply to the soaring demand.

Upon reaching the realization that we will reach our limit in terms of forest resources and that if we are to continue existing in this world then we have to move to the appropriated carrying capacity phase, then change is long overdue. The masses have to be educated on the fact that the current struggles resulting from diminishing forests are just a herald to the bleak future after forests have been depleted. Furthermore, there will be nothing left for future generations and in a nutshell, we are all contributing to the eventual demise of the human population.

4.2 Population Control

According to data from the Central Bureau of Statistics (Nairobi, Kenya, 2005), there has been a population growth from 21,427,000 in 1989 to 33, 829,590 million people in 2005. A lot of it is attributable to modern medicine that has reduced infant mortality rates, increased life span due to sound medical attention and informed diet choices as people are more educated. However, at the same time, the HIV/AIDS pandemic continues to take its toll on the Kenyan populace and despite the

counterbalancing effect of this pandemic, the population still continues to grow at an alarming rate.

This is where the social prestige that the traditional culture reveres comes into play. It has been mentioned previously that men count their wealth based on the number of children they have even if they have no ability to feed any. Therefore the African man is a sire by definition and most aspire to live up to that standard. The problem can be easily curbed by empowering the women in Kenya. The role of the Kenyan woman, whether in urban or rural areas, is monumental. They are responsible for the farms, bringing up children and when their breadwinner husbands can't bring food home, they take over for the sake of their families.

Therefore, women's projects do exist to try and manumit women from the bondage of domineering spouses so they can make choices that will be beneficial to them and their children. For instance, the forefront of the battle has been to educate the girl child in Kenya and encourage professions that are predominantly a man's domain. It is only through economic empowerment of the women that the population will be put to check. The reason for this is because most women abandon lifelong careers to take care of children but once they lose their independence then they have to submit to demands from their husbands even for more children to bolster their men's egos. There is fear of abandonment due to non-compliance, as the men look for other wives ready to give more children and the abandoned wives' children languish in hopelessness and foregone

educational opportunities. Therefore, most women depend on their husbands economically and acquiesce to ensure that their children are provided for in terms of basic needs but more importantly, education.

On the contrary, in urban areas where women hold high positions in government and other private industries, the current number of children is at an average of 2.5 children compared to 8 in a rural homestead. The Green Belt Movement and other organizations such as *Maendeleo ya Wanawake* (Development for Women) and family planning units have been at the forefront of empowering women to gain economic freedom as a population control strategy. The government also has a cut off point that is one point lower than that of male students as an incentive for more and more women to enter public universities. This will help control population as women spend more time in school therefore delaying onset of childbearing and then once they are out of school in the job market, pressures of a work place automatically makes them tend to have fewer children that they can accommodate in their limited time. The progress being made is commendable and the long-term results may start to be felt in the near future.

However, much still needs to be done to completely change the attitude of especially the rural women. Appealing to their conscience has failed. They live to please their spouses by having children but when it comes to feeding them, the meager resources available only lead to quest for more land and forest clearing so they can provide for their families. When there is a drought and crops do not do well, they seek alternative ways of

making money to buy food and due to their close proximity to most forests; they set up kilns for charcoal burning which is sent to urban areas as a substitute form of energy. Women are the key to curbing population growth. If population is checked, then there will be reduced pressure on the forests resulting in salvaging the remnants and also encouraging reforestation.

4.3 Poverty Eradication

In 2002, the Kenya government came up with a strategy to eradicate poverty. The Kenya National Poverty Eradication Plan (NPEP) was formulated through extensive participation of civil society, NGOs and Government agencies, (www.econewsafrika.org/Html/strat.doc).

The Kenya's Poverty Reduction Strategy (PRSP) consultative process was developed with a broad consultation with various stakeholders within and outside the government. PRSP has five basic components and policy objectives:

- To facilitate sustainable, rapid economic growth;
- To improve governance and security;
- To increase the ability of the poor to raise incomes;
- To improve the quality of life of the poor; and
- To improve equality and participation.

In my opinion, of the above mentioned objectives, the most important role is

improving equality and participation. In Kenya, there are certain regions that are strongly marginalized and treated with apathy when it comes to distribution of resources. Urban dwellers have access to almost all social amenities that improve the quality of life while rural populations are greatly disadvantaged and almost landlocked by poor infrastructure. They eke out a living by invading the commons leading to overfishing in the lakes due to indiscriminate fishing, land degradation due to continuous farming on a given piece of land but more important to this study is the resulting clearing of forest and their degradation. The natural resources available due to their close proximity to most forests provide an opportunity to make a living through exploitation from activities like logging, bee-keeping, grazing and so on.

Due to erratic weather conditions, farmers sometimes are caught in a bind where they can't produce enough for their families let alone have surplus for sale. Acknowledging that little else exists for income generation, the forests then become easy sources of a quick income in the face of desolation. If there was an equal distribution of resources, I believe the majority of rural people would be less inclined to invade forests for subsistence. That is not to say that there would not be cases of logging and deforestation but then the increase of resources at their disposal would definitely alleviate pressure on forests. Currently, the imbalance that exists in the country is quite unsettling with Nairobi residents commanding over 40% of the nation's wealth. With proper budgetary planning, some of this money hoarded by the rich elites in urban cities can be used for irrigation schemes that greatly boost the economic welfare of the rural

populations by providing a source of food and employment. Since these irrigation schemes are not weather dependent, they would gradually give a facelift to some of the forsaken places. Examples are the Mwea and Ahero irrigation Schemes in Kenya.

The second and final objective very pertinent to this study is that there should be ways of increasing the ability of the poor to raise their incomes. In Kenya, there is a local manufacturing project commonly dubbed as the *jua kali* sector. The basic premise of this project stems from the name itself which is Swahili meaning hot sun. What it encourages is that manufacturing does not have to happen in a big industry with heavy metals equipment; on the contrary, simple tools can be used creatively to manufacture goods that are in demand right in the backyards. The main target is scrap metal and also aluminum cans transformed into farming tools, utensils, storage boxes and so on for income generation. In fact the industry keeps growing at a very fast rate as more and more people realize the benefits accrued from the sale of *jua kali* products.

Another crucial way of boosting income generation would be creation of autonomous bodies to govern the sale of cash crops in Kenya. Most income generated from the sale of Kenyan coffee and tea to the developed world is lost to corruption and the farmers go for long periods without pay. To the rural farmers in Kenya, an understanding of their contribution to the global market is non-existent but, one only needs to travel to America and Europe to see that Kenyan coffee decks the shelves in most coffee shops.

In the 70s and early 80s, those who grew coffee and tea were very wealthy and had co-operative unions to champion their cause to the government. However, as time went by corruption slowly resulted in fleecing of farmers dues and most abandoned their farms for other lucrative deals. The biggest tragedy to probably result from this was that while coffee plants and tea usually intercrop well with trees, little else does. Therefore with a shift to more subsistence farming, trees were also cleared to pave way to plants that can't thrive under shady canopies. It is not too late, if the interests of the people are put first, they can begin to work towards alternative income generating projects that would definitely reduce exploitation of forests. When people's quality of life is improved, the quality of the forests improves too as the two have a positive correlation.

In my opinion, Chambers model of population growth and environmental degradations truly represents Kenya (Chambers, 1994). In the early 80s, Kenya's population was at a point where there was marked improvement in the conservation arena. There were national campaigns to build gabions in gulleys to prevent erosion; young children in primary school (Grades 1-8) participated in tree nursery planting and the schools even enabled individual families to transplant seedlings to their homes. School going children participated in what was called the Young Farmer's Association whose sole purpose was ensuring mutualism between farming and forestry. In other words, farming could coexist with forests harmoniously and the collaboration between schools and communities boosted agro- forestry and reforestation needless to say that the indigenous forests were untouched.

However, population continued to grow with the passage of time into the late 80s and early 90s and the delicate balance between population and conservation transformed into exploitation. This trend continues to date. With more people to feed using the same resources as before, more farms and land for grazing were needed and the only way that would be possible is through clearing forests which are fertile virgin lands for agriculture. Once farming exhausts a piece of land, then more forests are cleared for fresh fertile land and the vicious cycle keeps repeating itself.

According to data from the World Bank (2002), Kenyans continue to grow poorer everyday with more than half the population (17 million people) living below the poverty line. The ultimate solution is decreasing the gap between the rich and the poor and population control but in the meantime other poverty reduction strategies may be effective such as those mentioned above. The Kenya government continues to publish sessional papers stipulating Poverty Eradication Plans. While they all outline good suggestions, very little is done to implement them citing economic constraints. Implementation is key to poverty eradication.

4.4 Biocentrism versus Anthropocentrism

As Ramachandra Guha (1989) puts it, the environmental concerns that have a more direct impact on the lives of the poor are often overlooked in a scramble to preserve wildlands and therein lies the problem. Since colonial times, preservation of wildlands

and wildlife has been equated with environmentalism and this is obviously an infiltration of western influence. In no occasion are the lives and needs of the local people taken into account when propagating conservation ideals. Ideals are what they are because they are unattainable as long as the needs of the people are ignored or relegated to the periphery. Since the western world lacks trust in the Kenyan Government citing corruption, most foreign help is channeled through the autonomous NGOs, but most of them concentrate on saving the parks and wild animals mainly for the amusement of rich tourists and urban elites. In fact a majority of the Kenyan people have never been inside those parks since they cannot afford such luxuries. Therefore relocating people and settling them in other areas so as to reduce conflict between humans and wildlife further alienates people from conservation concerns.

Grassroots organizations such as the Green Belt Movement that encourages the planting of trees while also empowering women are very much needed. Kenya has to identify the basics of conservation that would first and foremost elevate human life so people have less need to exploit natural resources and then when an economic maturity and intellect level are attained through higher quality of life, conservation of wildlands will easily fall into place. By so doing the NGOs being set up would first educate and empower people to generate income and improve their lifestyles and then environmentalism as currently practiced would not be the daunting task it is today.

For example, the Green Belt Movement vision is, "To create a society of people

who consciously work for continued improvement of their environment and a greener, cleaner Kenya. Our mission is to mobilize community consciousness for self-determination, equity, improved livelihoods and securities, and environmental conservation. We are guided by the values of volunteerism, love for environmental conservation, pro-action for self-betterment, accountability, transparency, and empowerment.” Community development and capacity building are its main goals and it has succeeded in achieving them in nine districts nationwide. These are Bungoma, Embu, Kisii, Machakos, Maragua/Muranga, Meru, Nyeri, South Nyanza, and Trans Nzoia, (<http://greenbeltmovement.org>).

According to Professor Wangari Maathai , “Returning indigenous trees -- Acacia, cedars, Baobab -- to the landscape of Kenya will preserve water resources, halt soil erosion and desertification. Agricultural output will improve, and there will be more food, more fuel, and more building material, which will help strengthen and stabilize impoverished communities. When there is peace, democracy and good governance can flourish.” She also goes on to add, "None of us is that useless that we cannot improve the environment in which we live." (Washington Post, Dec 2004). Therefore, sustainable forest management is achievable if we work from the ground up and not vice versa.

4.5 Kenya’s Forestry Bill 2005

The principal objective of the Forest Bill, 2005, is to make further provision for the management of forest resources by requiring forest management to take account of:

1. The significance of forests in relation to rainfall regimes, ground water, soil stabilization and other factors affecting reliable agriculture and the daily necessities of rural life;
 2. The desirability of conservation of the biodiversity of plant and animal species to be found in forest environments;
 3. The need to restrict the taking of forest produce and other forest uses to environmentally sustainable proportions, for the benefit of future generations of Kenyans; and
 4. The need to respect the cultural significance of particular forest areas;
- and generally to meet emerging national and international challenges in relation to management of forest resources,

<http://www.fanworld.org/Comparative%20Analysis.htm>.

The bill not only recognizes that there are increasing national and international pressures to manage forest resources sustainably, but also adds a few objectives that are very significant if the battle against deforestation is to be won. First, the rural people do not understand the abstract concept of forests and rainfall distribution patterns. Since most people can't make the connection, then trees are not as important in their lives except as quick sources of income through logging. The new bill proposes to educate the rural population on the fact that trees determine how much rainfall a particular region gets in relation to regions of bare land. This in turn affects how much ground water a region retains which in turn determines the stability of soil. Given a favorable chain of

these events, the farmer benefits greatly by being able to grow crops even when rainfall levels are insufficient. If the masses can conceptualize how important trees are to agricultural output, then deforestation may cease to exist as it does at present.

Secondly, stressing the need for sustainable forest use is paramount to ensuring the survival of forests. The idea is not to completely ban people from accessing forests but educating them on how they use them sustainably and also having a stronger Forest Department that enforces fees for permits and supervise any permitted logging to ensure that loggers adhere to the guidelines as laid out by the Department. In addition, illegal activities in the forests can be put to check by the Forest Department through its trained personnel.

The final objective that is very relevant to this study is the respect of cultural significance of certain forests. As noted in a previous chapter, the traditional Kenyan society attached special significance to special trees and forests in which these trees grew. People have always co-existed with forests since the old days and thus any efforts to evict them are met with a lot of resistance. This resistance results in skirmishes that are responsible for forest degradation and eventual deforestation. A good example, the Mau complex, is threatened due to the eviction of the Ogiek people. These forest dwellers have lived in forest since colonial days and evicting them is opening up forests for exploitation as they become commons.

4.6 Pertinent Information

Perhaps the erosion of cultural practices is worth mentioning at this juncture. With modernization being at the forefront in most developing countries, newer generations continue to lose touch with their traditional beliefs and consequently, most of the cultural beliefs like worshipping certain trees and revered trees are gradually becoming a thing of the past. The current generation has been brainwashed to think that anything traditional is barbaric including worshipping trees. However, the problem is that the education system has failed to implement environmental education in the context of Kenyan history as a part of the national curriculum. Currently, the only way students can participate in environmental activities is through school clubs. Perhaps, glamorizing the issue of environmental concern in schools will help alter the prevailing attitude towards environmental health. Education can change attitudes and this is not a one time event but rather, the basis of this knowledge will have to be constantly refreshed with each successive generation.

The shift from over-reliance on forest resources to modern medicine and products has also seen the value of forests decline hence indiscriminate felling for firewood and charcoal burning. This is not to say that charcoal burning is a recent phenomenon. On the contrary, this is a practice that has been passed down from generation to generation but it has shifted in scale from a domestic to a commercial endeavor. On numerous occasions, The Kenya wildlife service (KWS) while conducting aerial surveys of the game parks and reserves continue to unearth illegal kilns set up in the forests for charcoal burning. It

is a common sight in Kenya for people to parade bags of charcoal by the roadsides for motorists to buy. The motivation for commercial charcoal burning is both poverty and greed and the difference between the two remains hazy. There isn't enough evidence to make sound conclusions as to why charcoal burning is such a lucrative business in Kenya because despite the readily available raw materials, it is very labor intensive. However, the resulting deforestation is undeniable.

According to a spokesman from the United Nations Environmental Program (UNEP), the solution to deforestation in Kenya lies in the intrinsic realization of the monumental services rendered by the ecosystems and working towards conservation. As Wangari Maathai put it during her 2004 speech upon receiving the Nobel Peace Prize, "Tree planting is simple, attainable, and guarantees quick successful results within a reasonable amount of time." The green belt movement which she started in Kenya in 1977 has planted over 30 million trees that provide shelter food and fuel and income that supports education and domestic consumption needs.

4.7 Ongoing Projects

According to the World Bank country director in Kenya (2004), the bank would launch an analytic study of the forest sector in November of 2004 with an aim to providing the Kenyan government with the necessary technical assistance to address some of the convoluted policy issues in its attempts to provide a sustainable approach to forest management. This is especially in the ways of responding to mounting pressure

from local communities e.g. the Ogiek forest communities and others seeking to gain access to forest resources. All this is pending the passing of the forestry bill 2005.

Another project that is aimed at improving lives of the people in Kenya whilst conserving the forests is the Acacia project. The Acacia tree is famous for its Arabic gum with uses in the pharmaceutical, food, and cosmetic industries. In addition, it has far reaching roots that act as a barrier to desertification by preventing soil erosion and enrich soil for agricultural use through nitrogen fixation. It's foliage and pods are used as fodder, firewood, and building materials. Therefore encouraging the growing of acacia trees is curbing deforestation and simultaneously improving lives.

It is my belief that possible interventions underway will achieve positive results even if minimal. However, it is imperative that the final cause of deforestation be identified. As Bromley puts it,

“As long as a particular nation is driven by a desire to earn rents from harvesting trees, and as long as land hunger (itself often the result of other policy failures) drives governments to open up remotes areas, then very little is to be gained by suggesting that nations stop building roads, or that property rights be made more secure, or that population growth e implemented, or that government corruption be rectified, or that powerful logging interests be reined in. The only way to confront deforestation is to focus on its final cause, (Bromley 1999, p.278).”

Chapter 5

Conclusions

“Experience all over the developing world shows that without a participatory approach by the local people, land-care practices often fail, and there must be trade-off between forest conservation and utilization. When all human activity is outlawed; when people lack basic necessities in the midst of bounty; when children walk bare-foot and pot-bellied because parents cannot cook their food so that tourists can grow in numbers, conservation is utterly futile,(Wamugunda, 2005)”

This case study set out to identify the key causes of deforestation in Kenya with specific investigations into the cultural and economic dimensions of the problem. Based on the findings, it is clear that Kenya needs to identify the final cause of deforestation in the country so effective forest management policies and thus conservation, can begin to shape the forests. There is widespread awareness of deforestation and various projects carried out by NGOs and governmental bodies exist to continuously refresh knowledge on tree conservation. There is also gradual progress although the end result may take a while to be realized. The Kenya Forestry Research Institute maintains that tree planting in Kenya has increased over the years although the Kenya forestry working group confirms that agro forestry exists both in individual and in bigger farms for commercial purposes but it is not clear to what extent it is alleviating pressure on indigenous forests.

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Definition of Case Study

http://en.wikipedia.org/wiki/Case_study

Definition of Environmental Kuznets Curve

www.agtrade.org/glossary_search.cfm

Definition of Non-Governmental Organization

<http://en.wikipedia.org/wiki/NGO>

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