

**AN APPRAISAL OF COMMUNICATION AGAINST
FOREST DEPARTMENT IN ENCROACHED FOREST
FOREST RESERVE**

BY

SHULA D CHIKO

**A Report submitted to the University of Zambia in
the degree of Master of Commun**

The University of

2012

**AN APPRAISAL OF COMMUNICATION AGAINST DEFORESTATION USED BY THE
FOREST DEPARTMENT IN ENCROACHED FORESTS: - A CASE STUDY OF KALULU
FOREST RESERVE.KABWE**

BY

SHULA D CHIKONDE

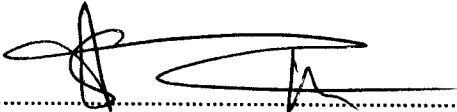
**A Report submitted to the University of Zambia in Partial fulfilment of the requirements of
the degree of Master of Communication for Development**

The University of Zambia

2012

I, Shula D Chikonde declare that this report:

- (a) Represents my own work;
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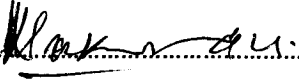
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APPROVAL

This report of Shula D Chikonde is approved as fulfilling the partial requirements for the award of the degree Master of Communication for Development by the University of Zambia.

Signed:

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KENNY MAKUNGU


04/07/12

Abstract

The study's main objective was to carry out an appraisal of the communication modes and messages used by the Forest Department in curbing deforestation in National Forest Reserves. Kalulu Forest, in Kabwe, Central Province was chosen for the case study. Kalulu Forest was made a National Reserve due to the presence of the water catchment area which provides household water to the residence of Kabwe. The forest was put there to act as a carbon sink.

The research was carried out at the Forest Department in Kabwe and eight of the cooperating partners involved in policy formulation and service provision in Kalulu Forest. The researcher also interviewed one hundred and twenty squatters and six headmen.

The data was collected through the distribution of questionnaires and analysed using the Statistical Package for Social Sciences. In-depth interviews and Focus Group Discussions were also used. The results revealed a number of important things.

No participatory communication strategies and campaigns are employed in trying to educate the squatters on the importance of conserving Kalulu. None of the squatters have ever participated in any conservation program such as an afforestation project. Most of the squatters moved into the forest after being retrenched, reaching retirement or after none renewal of job contracts. Farming is the most common form of survival. Most of the crops grown include maize, soya beans, ground nuts, sweet potatoes and vegetables. Sunflower and cotton are grown on a small scale. Food is grown for household food security whilst the surplus maize is sold to Food Reserve Agency who has set up a depot in the forest reserve known as Makupu Depot.

Focus Group Discussions were identified as the main means of communication between the Forest Department and the squatters. However, most of the discussions held were based on informing the squatters the reasons as to why they need to leave the forest and not how they come on board as partners and assist in protecting the forest.

The study recommends that the current legislation on forests, which explicitly forbids for the occupation of people in forest reserves, be nullified in order for the forest department to be able to fully embrace environmental sustainable programs such Joint Forest Management and Community Based Forest Management which will allow the squatters to partake as partners and participants in development projects that pave way for them to live in harmony with the environment. Education and environmental awareness should be brought to the squatters through the use of theatre, drama, and focus group discussions. Local knowledge should be incorporated and not ignored.

Dedication

To my beautiful daughter Bwembya whom I fondly call 'Bubu' or 'Abena', for making me smile even when all the chips were down. You are my energizer, my tranquillizer, my friend and one of the most intelligent people I have ever known. I am so glad that you are mine and I know that wherever life may want you to go and whatever you may choose to be, you will make a great impact in the world in your own small way. May God Bless you.

To my sister Mwansa, what can I say? Thank you for making the greatest contribution of all and sharing what you had. I believe in you and I know you are destined for great things. Always keep your head high. I love you.

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Abbreviations

Acquired Immune Deficiency Syndrome.....	AIDS
Agriculture Sector Investment Programme.....	ASIP
African Union.....	AU
Community Based Forestry.....	CBF
Centre for International Forestry.....	CIFOR
Deforestation Awareness Campaign.....	DAC
Department for International Development.....	DFID
Food Agriculture Organisation.....	FAO
Focus Group Discussion.....	FGD
Forestry Department.....	FD
Government of the Republic of Zambia.....	GRZ
Gross Domestic Product.....	GDP
Green House Gases.....	GHG
Information, Education and Communication.....	IEC
Integrated Land Use Alliance.....	ILUA
International Monetary Fund.....	IMF
Joint Forest Management.....	JFM
Millennium Development Goals.....	MDGs
Ministry of Finance and National Planning.....	MFNP
Ministry of Tourism Environment and Natural Resources.....	MTENR
Non-Governmental Organisation.....	NGO

Participatory Forest Management.....	PFM
Structural Adjustment Programme.....	SAP
Statistical Package for Social Sciences.....	SPSS
Sustainable Forest Management.....	SFM
United Nations.....	UN
United Nations Convention on Climate Change.....	UNFCCC
United Nations International Child Education Fund.....	UNICEF
World Bank.....	WB
Zambia Consolidated Copper Mines.....	ZCCM

CHAPTER ONE

INTRODUCTION

1.0 General Introduction

In Zambia, lack of energy resources, increments in electricity tariffs, rapid population growth and high unemployment levels are and continue to pose a great threat to natural resources, in particular forests and trees. The continued intensification of agriculture to meet needs of growing populations and provide income, create major problems of environmental pollution with concomitant soil and water deterioration. Increased use of pesticides and chemical fertilizer has serious ecological consequences. Large-scale irrigation schemes, the reclamation of marginal land and the clearing of forests may pose severe threats to the stability of the natural ecosystems.

Forests are highly under threat from depletion as they offer many immediate incentives and yet, are not given time to regenerate. In the recent past the cry for forest conservation has been more eminent and although the Forestry Department of Zambia has employed various mechanisms to try and curb the vice of deforestation, the trend has continued to accelerate.

Most National Protected Forests in Zambia have been encroached and there is very little evidence of anti-deforestation communication research specifically tailored for the squatters. Practitioners of the field tend to tailor messages of deforestation to audiences that are easy to access and with the use of traditional forms of media. These audiences are also rarely the primary source of deforestation.

1.0.1 General Background

The attachment and research were an appraisal of communication modes and messages utilized by the Forestry Department (FD) of Kabwe in trying to curb deforestation.

The threat of deforestation in forest reserves is caused by illegal cuttings in coupes, commercial harvesting as well as vast illegal settlements by squatters and conversion of forest to agricultural land. These in turn are driven by population growth, a lack of employment and basic needs of the people. About 20 percent of forest reserves in

Zambia are either encroached or depleted due to over-exploitation in wood products, settlement and cultivation. Studies have revealed that there is a huge lack of communication and thus in turn collaboration between most government agencies involved in environmental protection and the forest based squatters which lead to a lack of participatory policies and programs that may lead to environmental sustainability.

Therefore it was the studies main objective to appraise the communication modes and messages used in curbing this vice and establishing their effectiveness at informing and educating communities on the importance of living in harmony with the environment and the benefits of sustainable forest management.

The research was carried out in Kalulu Forest Reserve Number 32 in Kabwe Rural, Central Province and it involved the squatters living in the forest, the technocrats from the FD at both provincial and district level and various stakeholders who are directly involved in policy formulation and implementation.

The world has lost about half its forest over the years (*Underlying Causes of Forest Decline, 2000: 1*). The past decade has seen a demand for a greater voice in forest protection and management. There has been a virtual explosion of interest and concern by researchers, policy makers and development practitioners in the rate at which forests are being depleted.

Many Less Developed Countries (LDCs) have witnessed a greater influx of people trekking and settling within forests mainly due to a lack of social and economic amenities in both urban and peri-urban areas. Unfortunately, many of these forest based communities and squatters put pressure on forest resources in an unsustainable manner and have no viable plan of restoring them. Zambia is no such exception as both rural and urban based communities exploit forests in search of profits and means subsistence. Despite a number of initiatives to stop forest decline, Zambia continues to lose many hectares every year.

1.1 Location

The study was carried out in Kabwe, Central Province of Zambia, a country located in Southern Africa. Zambia is a country that is between latitudes 10 and 18 degrees south and longitudes 22 and 33 east (*Zambia Information Services, 1979: 14*). It has an area of 752,720 square kilometres and it represents 2.5 percent of the total area of Africa

(Kaplan, 1979: xiv). Zambia has nine provinces namely Luapula, Southern, Northern, Eastern, North-Western, Western, Copperbelt, Central and Lusaka. The new president elect has however announced the introduction of Muchinga province as a tenth province during the opening of parliament on the 14th of October 2011. Muchinga will be demarcated from Northern Province which is the biggest province in the country. However, this suggestion will have to be debated in parliament before full logistics can be made in this regard.

The name Zambia comes from the great meandering Zambezi River. The source of the river is in the Lunda uplands at the north-western edge of Zambia near the border with Angola. It starts as an insignificant trickle out of the ground and thereafter gradually widens and rapidly grows as into a large river. It briefly disappears into Angola from where it re-enters Zambia at the extreme north-western corner as the mighty Zambezi. The river then meanders around the western, southern and eastern edges of Zambia until it exists through Mozambique en-route to the Indian Ocean.

Most of Zambia’s area is a plateau lying between 1,000 and 1,600 meters elevation with a flat or gently undulating terrain. The country, which was formerly known as Northern Rhodesia from 1890 to 1964, is landlocked making it totally dependent on other countries for its coastal exports and imports. It shares borders with Malawi to the east, Mozambique to the South East, Zimbabwe to the South, Botswana and Namibia to the South West, Democratic Republic of Congo to the North, Angola to the West and Tanzania to the North East.

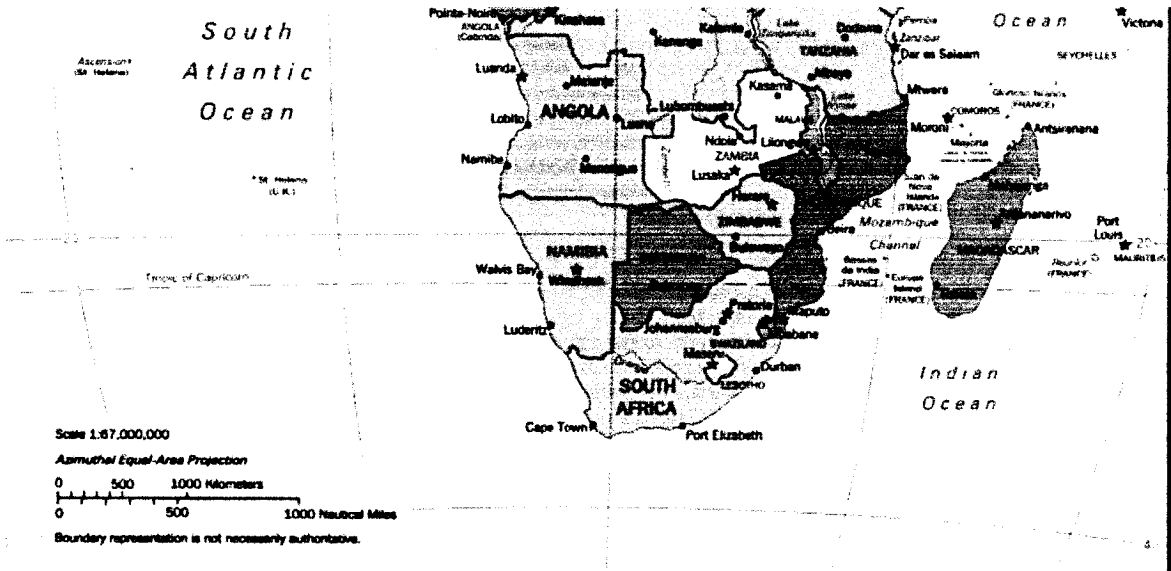


Fig I: Map of Zambia’s Neighbours Above



Fig II: Map of Zambia's Towns and Districts Above

1.2 Climate

Zambia has a sub-tropical climate which is characterized by three climates. The cool dry winter from May to August with temperatures ranging from 16 degrees Celsius to 27 degrees Celsius, the hot dry season during September and October and the warm wet season from November to April with temperatures ranging from 27 degrees Celsius to 38 degrees Celsius (Ibid).

Zambia is brown and dry for more than half the year. During the five months between November and April, tropical rain storms occur at regular intervals, bringing life and colour. The northern part of the country receives the most rainfall with an average mean annual rainfall of approximately 1,475 millimetres. The southern and eastern parts of the country receive the least rainfall and are drought-prone with an average mean of 710 millimetres of rainfall annually. Since the rainfall tends to be concentrated in storms, much of the top soil is washed away.

1.3 Water

Zambia's water sources are rich and varied. Although the rainy season only occurs once a year during the period of November to April, Zambia's total surface water coverage is 45,000 kilometres holding 60 billion cubic meters of water and accounts for two thirds of Southern African water resources (*Environmental Council of Zambia, 2000: 112*). Ground water occurs all over the country within 100 meter depth (*Ibid*).

The main river sources in Zambia are the Zambezi, Kafue, Luangwa and Luapula. After leaving Lake Bangweulu, the Luapula river flows down the plateau, valleys and gorges along its path. The Kafue River runs along the west-central part of Zambia, dividing west from east, while the Luangwa River runs along the eastern side of the country. Both rivers adjoin in the Lower Zambezi region to continue the Zambezi River to Mozambique. These rivers support a supreme collection of wildlife which is tapped by the tourism industry through various national parks such as the Lochinvar, Luangwa, Kafue and others. In addition, water transport, fisheries and hydroelectric power projects are being developed along these rivers.

The Zambezi River is important not just because Zambia derives its name from it but also it is the largest river in the country. As it flows between Zambia and Zimbabwe to the south, the river drops over a long gorge called the Victoria Falls. The Victoria Falls commonly known as the Mosi-o-tunya (smoke that thunders) by the local people is one of the most spectacular of the world's natural wonders. It was made known to the people of the western world by renowned explorer David Livingstone in the mid-1850s. During its peak in April, water flowing at 620,000 kilolitres a minute plunges over 1,700 meters rim in a series of grand cataracts, throwing up a cloud spray which produces an eye-catching lunar rainbow in its background. The Falls is the best known feature of the mighty Zambezi River. Other waterfalls include the Chishimba, Nyanga and Musonda.

Zambia's major lakes include Tanganyika, Mweru, Mweru-Wantipa, Bangweulu and the man-made Kariba which is a major source of hydro-electric power for both Zambia and Zimbabwe. The construction of the Kariba dam begun in 1956 and was completed in 1960.

1.4 Population

Zambia has seventy-two dialects with five major ethnic groups which are the Tonga, Bemba, Lozi, Nyanja and the North-Western groups of Kaonde, Luvale and Lunda. They

all live in harmony with each other and this contributes to the peace and hospitable environment that exists in the country.

During the latest population census of 2010, Zambia's population was estimated at 13,046,508. Of this population 6,394,455 are Males and 6,652,053 are females and 7,978,274 live are estimated to be living in the rural areas (www.zambia-advisor.com). In the last population census of 2000, the country's population was estimated at 10,285,600 with a male to female distribution of 49.3 per cent and 50.7 per cent. The average population growth rate showed a decline of 2.9 per cent compared to the previous 1990 population census which had showed a growth rate of 3.1 per cent (*Census of Population and Housing 2000: 1-8*).

1.5 Political History

Kenneth Kaunda was the first president of an independent Zambia which gained independence on the 24th of October, 1964 from the British Colonial powers, and helped the country to enjoy unprecedented prosperity (*Optic:5*). Kenneth Kaunda was highly committed to economic development of the country through the principle of Humanism which is a principal based on man being the centre of everything, working together with no exploitation of man by man. During the first republic which lasted until 1972, Zambia practiced plural politics. Kaunda's administration made efforts to diversify the economy from copper to agriculture and industry. Despite over 70 per cent of the population being involved in farming, large commercial farms continued to dominate the cash and export markets.

The second republic was marked by a one party state and a dwindling economy caused by a heavy dependence on copper whose price had fallen on the world market. The second republic lasted from 1972 to 1991. Agriculture output grew at a slow rate and any gains that were made in the mid 1970s were mollified by the mid 1980s due to an increase in population forcing Zambia to become an importer of food. Zambia's economy continued to decline throughout the 1980s. In 1984, 23 African countries including Zambia were identified as food deficit areas threatened with famine due to prolonged drought (*Ibid: 113*).

In 1991, Zambia held elections. This era marked the reintroduction of plural politics by the then president Fredrick Chiluba and the Movement for Multiparty Democracy. However, the socio-economic indicators continued to show serious decline with worsening living conditions for most Zambians. Most companies had to undergo

restructuring including the Zambia Consolidated Copper Mines, (ZCCM), which was the country's second largest employer after the government. This saw many people losing jobs through retrenchment and early retirement. This forced many Zambians to return home to the village whilst some remained in the urban areas and sort informal employment. Others opted not to return to the village either because they had never been there or were still awaiting their fiscal benefits and dues to be remitted but they could not afford to stay in the urban area either as they had no means of survival thus they decided to settle on restricted land and became squatters.

In 2001, Zambia held elections and Levy Mwanawasa became the third president of Zambia. He adopted a zero tolerance scale on corruption after his demise in 2008; Rupiah Bwezani Banda took over as president of the Republic of Zambia still led by the MMD government. In September 2011, Michael Sata ushered the Patriotic Front, PF, into power and became the fifth president of Zambia.

1.6 Economy

During the first five years after independence, copper production, exports and prices rose. Copper accounted for 40 to 50 per cent of Zambia's Gross Domestic Production, GDP (*Kaplan, 1979: 40*). Efforts to diverse Zambia's economy in the 1970s from copper trade to agriculture and industry proved elusive due to the small base.

Zambia's economy continued to decline throughout the 1980s into the 1990s. In 2000, Zambia became eligible for debt relief under the Heavily Indebted Poor Countries, HIPC. The GDP growth has been estimated to continue at 4 per cent and inflation to remain at 20 per cent (<http://www.dci.gov/cia/publications/fact>).

Zambia is vulnerable to variations in weather from season to season. Rainfall is unpredictable leading to poor harvest of food crops and other agricultural products. Food production in Zambia has been subjected to politics and this has contributed to food shortage. This started from the Kaunda regime and has continued to date. The government does not assign highest priority to agriculture. The root cause of Zambia's present agriculture crisis can be traced back to the colonial era (*Ibid: 118*). Colonialism transformed Zambia's economy from subsistence agriculture to an export oriented copper industrial sector. Subsistence agriculture was disrupted when able bodied men migrated to the mines in search of wage labour. The numerous taxes imposed on the indigenous population and the need for labour on the mines forced men to migrate and later send for their families to join them on the Copperbelt.

The colonial administration made no investment in Zambian agricultural development, except for the introduction of commercial farming along the line of rail. From the time of independence, the government tried to improve the agricultural sector by introducing several policies. Subsidy of agricultural inputs, soft loans, cooperatives and family farm schemes were introduced. However these were not sufficient to make farming profitable and to increase food production.

To try and improve the agriculture sector, the government under president Chiluba liberalized agriculture for the realization of its full potential. This was done under the Agriculture Sector Investment Program (ASIP). The government's main objective was to promote smallholder productivity by redirecting and strengthening agricultural credit and improving rural infrastructure such as marketing facilities and roads (*Ibid*: 37). However, the agriculture sector in Zambia continues to suffer great setbacks such as late delivery of inputs and poor marketing facilities of the produce.

Maize, cassava, sorghum, finger and bulrush millet, peanuts and beans are the principle staple foods grown in Zambia (*Kaplan, 1979: 173*). Tobacco, cotton and sunflower are the crops grown for commercial purpose. Fisheries, dairy and live stock farming are some of the agricultural practices Zambia (*Ibid: 175*).

The major source of income in the urban areas of Zambia is through formal and informal employment. However, the rate of employment has dwindled over the years and Zambia has seen a lot of youths graduate from college and university without getting into formal employment.

1.7 Health Services

At the time of independence Zambia had excellent health services provided by the government and the mines. By 1975, with the fall in copper prices and the rise in the cost of fuel, Zambia's economy fell and had a negative impact on the health delivery system (*Ministry of Health, 1996: 1*). By 1985, the health sector was barely able to provide basic health care to the patients. Though provided freely in a centrally controlled system, the services were inefficient and costly to the government (*Ministry of Health, 1996: 2*). With the coming of the 1990s, it was realized that the health of the people could only be improved if the system underwent a radical reform.

The year 1995 saw the provision of health services in Zambia undergo great changes (*Ibid*). Through the health reforms there was a decentralization of health delivery

services giving more independence to the newly established District Health Management Boards. These were given the powers to plan and allocate funds to specific district health services.

However, the provision of health services continues to be hampered by inadequate maintenance of health facilities, shortage of drugs and other medical supplies. Inadequate professional personnel to operate the existing facilities have compounded the problems in the health sector.

The government has continued to place emphasis on the implementation of primary health care, child immunization, maternal health, nutrition promotion programs and recently male circumcision. Government in collaboration with the donor community and other stakeholders continues to support Human Immune Virus, HIV, and Acquired Immune Deficiency Syndrome, AIDS, programs as well as projects whose key interest in the prevention and adherence to treatment for tuberculosis. Government and key stakeholders also supports programs and initiatives to reduce the incidence of preventable diseases such as malaria.

1.8 Education Services

The educational system in Zambia is composed of three levels – primary, secondary and tertiary (*Ministry of Information and Broadcasting Services, 2000: 92*). According to the 1995 statistic, Zambia had 4000 primary schools, 224 secondary schools, 14 teacher-training colleges 17 technical and vocational institutions and two universities. In 2005, Zambia had 6, 962 basic schools within 2.8 million learners and 463 high schools with more than 136, 000 learners (*ICT in Education in Zambia, 2007: 4*).

Almost two-thirds of the children end their education at the primary level. Only one-third of primary school dropouts have the opportunity to go to secondary education. Of those who enrol for primary education, less than 20 per cent enter secondary school, and only 2 per cent of the 20 to 24 age group enter university or some other form of higher education.

Higher education is provided by two universities under aegis of the Ministry of Education and various specialized institutions and colleges controlled by the Ministry of Science, Technology and Vocational Training. Primary and pre-primary school teachers are trained at primary school teacher-training colleges while secondary school teachers are trained in teacher colleges and at the University of Zambia.

Distance higher education is offered by technical and vocational colleges and the University of Zambia as well as other private universities such as Cavendish University.

Despite the introduction of free basic education in 2002, many girls and other vulnerable groups drop out of school before they complete primary school, largely due to poverty and the impact of HIV and AIDS on families. According to the United Nations Information Child Education Fund (UNICEF), the Zambian education sector has a combination of low school enrolment and low school achievement, which means that one out of five children realize their right to quality basic education. Adult literacy in Zambia was 80.6 per cent in 2003 with 86.8 per cent for men and 74.8 for women.

The Department for International Development (DFID) reports more recently, however, that Zambia has shown improved performance against the Millennium Development Goals, MDGs, in primary universal education and promoting gender equality in schools with net enrolment rates increasing from 71 per cent in 2000 to 95.6 per cent in 2005. DFID also notes that more needs to be done if the MDGs are to be achieved by 2015.

1.9 Mass Communication

The primary modes of mass communication in Zambia are:

Newspapers

Zambian newspapers are circulated at national, provincial, company, municipal and church level. The country has three main daily newspapers. Of the three newspapers, two are state owned whilst one is in private owned tabloid. The rest are weeklies, fortnightlies or monthlies (*Kasoma 1986: 23*). Most of the paper distribution is unfortunately centred along the line of rail. This has disadvantaged communities that do not live in the urban and peri-urban areas.

Radio

Radio broadcasting started in Zambia in 1941 with a small government radio station at the old Lusaka airport. Very few people had access to it. It was only in 1949 when simple radios arrived in the country from England that most people begun to access radio broadcasting in their homes. Currently most Zambian homes have radios and apart from the Zambia National Broadcasting Cooperation, there are several community and private run radio stations across the nation.

Television

This started in 1961 in Kitwe (*Ibid: 24*). It was started by the London Rhodesia Company – Lonrho. The government bought the facility in 1964 and another station was opened in Lusaka. The length of transmission was extended.

In 1972, the Zambian government instituted a localization of radio and television insisting on 90 per cent to be local Zambian production (*Ibid: 25*).

1.10 Location of the Study

As earlier stated, the study was carried out in Kalulu Forest Reserve number 32 in Kabwe which is the principal town of Central Province. Kabwe is located in vicinity of latitude 14' 27 degrees south and longitude 28' 27 degrees east. The town is situated about 130 kilometres north of Lusaka city.

Kabwe has been an important mining town for many decades starting from as far back as 1902. Due to these mining activities, Kabwe became highly urbanized and although most of the environmental challenges were addressed at the time, this has not been the case ever since the mines closed down in 1994 and the subsequent economic downturn affected the town's capacity to deal with many socio-economic and environmental issues such as provision of decent accommodation, waste management, coordination and control of land use and settlement patterns, provision of clean and safe water, maintenance of drainages and many other environmental mitigation measures such as replenishing of the forests and paving where there is risk of soil erosion.

1.10.1 Institutional Framework of Kalulu Forest Reserve

Kalulu Forest is 4738 Hectors and it is the smallest forest in Kabwe. It is close to Kabwe town and close to Makululu Township which is the third biggest township in Southern Africa. It is on state land. Kalulu was made a government forest reserve due to the fact that it has underground water fields and a great number of indigenous trees which protect this underground water fields. The FD has been given the mandate to protect this forest in accordance with the Forest Act of 1973. The FD has two parts-that of Research and that of Extension.

Until 1996, no squatters had occupied Kalulu Forest and although people would go into the forest to cut trees for either subsistence or commercial use, the Forest Guard who lived, patrolled and protected the forest from illegal activities, ensured that all who came into the forest had obtained an up to date license from the FD. The Forest Guard reported to the FD once week to give a report. Charcoal burners and timber produces had to follow the Coupe System which entails for a specific part of the forest to be utilized for a given number of years in a proper and sustainable manner under the watchful eye of the FD. This was the trend from the first republic when the forestry sector had strong and vibrant policies and the government had an understanding for conservation.

In 1996, the FD underwent restructuring which abolished the Forest Guard who patrolled the forest. People within and outside Kabwe took advantage of this scenario and moved into Kalulu forest. The new structure of the FD did not take into consideration the fact that certain individuals needed to be assigned to the forests to ensure that squatters did not take advantage of the situation. Lack of financial and mobile resources at the FD led to a lack of frequent visits to the forest in order to be up to date with events occurring there.

Currently, there are close to over 5,000 squatters, which include adults and children, living in Kalulu Forest with a live stock data of 560 cattle, 313 pigs and 1,200 goats. The population comes from six sections namely Chitanda, Kapande, Misamba, Chipwaya, Sangano and Musonda. Other beneficiaries of the forest are residents from Makululu, Kawama, Mukobeko, and Bwacha Chimanmani Townships.

The sections are formed by retrenches, retired, ex service from the army, police, teaching services and companies such as National Milling, Kabwe Milling, Kabwe Industrial Fabrics, Zambia Railways and ZCCM. The sections are managed by six headmen who were once charcoal burners and lived in the forest during the Coupe system. Once the Forest Guards lost employment, they left the forest and no one from the FD came to Kalulu to sensitize the then 97 squatters on the importance of preserving Kalulu and ask them to leave the area. People who had not been paid their dues or simply had nowhere to go after retrenchment or retirement decided to settle in the forest. When most of the indigenous trees used for charcoal production had been depleted, the squatters turned to farming as a source for food and income. The government also contributed to the huge influx of people coming into Kalulu Forest by not paying retirees their dues on time. Some people would stay for more than 4 years before their dues could finally be paid. Although Kalulu forest witnessed a huge influx

of the people move into the forest towards the late 1990s, some people have been living in the forest for more than 35 years and some of the Forest Guards still live in the forest and have to resolute to farming as a way of making an income.

There have been cries by the community of Kalulu to either have the forest de-gazetted or downgraded to a local forest. But this is not possible for the FD as Kalulu Forest is a water catchment area and which is not only the major source of underground water for Kabwe but also the largest supplier in terms of quantity to the entire district. There have been no conclusive studies carried out in Kalulu to assess the flow of the underground water and so this makes it even more difficult to de-gazette the area. Research carried out shows that the high level of encroachment poses a huge threat to the existence of the water catchment area. The other problem is that the trees which have been and are still being cut down and cleared for various reasons are supposed to act as a carbon sink in order to protect this area.

The FD has insisted that all squatters in the forest reserve must be evicted because they are living there illegally according to the Forest Act. The argument however from other institutions such as the Department of Community Development and Social Welfare is that the squatters have lived in the area for many years and therefore they cannot just be removed without finding alternative accommodation for them. According to Town and Planning Act of the Laws of Zambia, a person who has lived in an area for a minimum number of years cannot be evicted without being compensated. As a result of this scenario the district is now stuck and unable to resolve the matter whilst the continued human habitation of the forest reserve is slowly depleting the town's most valuable resource water which it cannot afford to lose at all costs.

1.11 Statement of the Problem

The wholesale destruction and degradation of trees and forests in Zambia has reached the proportions of a major ecological crisis. Although it is not easy to obtain a clear picture of the extent of these losses in terms of statistics, in recent years, information has become available concerning this threat which has serious consequences not only for the soils water balance, climate and the economic and social well-being in the country, but also for environmental changes at the global level.

Deforestation in Kalulu is mainly caused by pressure to provide more food for a rapidly increasing population, to furnish new areas for resources use and human settlement

and in particular for various forms of shifting cultivation and for small-scale, low-technology based sedentary agriculture. The efforts of such a trend are not only devastating to the physical environment and the natural resources base that it represents but also to the inhabitants of such an area as the non-existence of trees leaves populations open to the spread of disease. Although it is true that the poor burgeoning population in Zambia has little or no alternative but to exploit trees more intensively for subsistence, this kind of poverty spiral only leads to downward. The human component of the downward environmental spiral can be seen almost universally in the Third World in the increased levels of grinding poverty, malnutrition, disease, lack of shelter and other basic human needs.

Trees and forest play a vital role in providing cover and acting as a wind-breaker in the spread of disease, shields in times of rain so as not to have the top most soil which the richest and most nutrition filled part of the land, washed away and also in there significant role in the rain cycle. The question thus arises, with all the high levels of poverty in Kabwe and more specifically in Kalulu with total reliance on forests for subsistence and clearing of trees for agriculture, what solutions can be brought about in order to curb the vice of deforestation without plunging the poor into further despair?. What participatory communication strategies that benefit both the FD and the community can be employed in order to achieve this?



Fig III: WOMEN CLEARING LAND FOR AGRICULTURE IN KALULU



Fig IV: CHARCOAL PRODUCTION IN KALULU

1.12 Rationale of the Study

Although there is a lot of information and great interest in deforestation, this data seems to be centred with the implementers of these ideas and does not fully trickle down to the grassroots and thus there is a big gap in the flow of information. Development practitioners tend to see communities as mere receivers of knowledge and not as participants. This has led to many antagonisms as local knowledge is many a time ignored and yet it is this local knowledge that can help to accelerate development.

Stakeholders have information and easy access to knowledge and education based on environmental issues which they tend to think can easily be understood and accepted by the local people once they are forced into doing so. One important thing is that the source, message and channel need to marry-well with the audience. It is imperative that the out-come of this research assists relevant authorities and stakeholders to devise measures, programs and communication strategies that will assist reducing the rate of deforestation and help to re-generate the forest.

1.13 Objectives of the Study

The objectives of the study were to:

- To examine the modes and messages used by the FD in sharing information on deforestation with the people of Kalulu
- To examine how modes and messages are delivered
- To examine the availability of location specific environmental solutions for the squatters of Kalulu
- To evaluate how effective current policies and programs are in trying to curb deforestation in Kalulu
- To assess if the strategies used by the FD are adequate to inform the squatters of the attainment of Millennium Development Goal 7, MDG 7, which specifically seeks to attain environmental sustainability by 2015.

CHAPTER TWO

METHODOLOGY

2.0 Research Approaches

This chapter deals with the research approaches that were used in quantifying the study.

Due to the dynamic nature of Kalulu Forest Reserve, there was a need to use a mix of research approaches to gather as much information as possible from the different stakeholders. These included:

- Direct Observation
- In-depth interviews
- Holding focus group discussions
- Desk Research
- Administering questionnaires
- Attending community club meetings

2.0.1 Direct Observation

The researcher between dates of August 2011 and October 2011 stayed in Kalulu forest with one of the village headmen named Sikapizya and his family for a total of 28 days in order to gain a further understanding of the community and how they lived.

Interaction with members of the FD assisted the researcher to gain a further depth and understanding of the organizations operations.

2.0.2 In-depth interviews

Officials from the FD at both the provincial and district level were interviewed. A technocrat from Mpima Forest Reserve which has a tree nursery was also interviewed.

Focal persons amongst co-operating partners of the FD such as Ministry of Community Development, Kabwe Municipal Council, (KMC), Ministry of Agriculture and Ministry of Planning were also interviewed. Representatives from Lukanga Water and Sewerage-, (LWS), who are in charge of the Lukanga Water Works which are situated in Kalulu Forest, were also spoken to. Officials from Wildlife Environmental Conservation of

Zambia, (WLECZ), and Zambia Network of Environmental Practitioners, (ZANEEP), were also interviewed.

As earlier eluded to, Kalulu is a National Forest Reserve and hence no one, in accordance with the law should be living there but the Food Reserve Agency has a depot called Makupu Depot stationed in Kalulu Forest and buys crops from the farmers there. The researcher carried out an in depth interview with an official from there.

The researcher used a voice recorder during each of the in-depth interviews. The researcher had a set of guided questions but filtered in other questions depending on the response.

2.0.3 Focus Group Discussions

Focus Group discussions, FGDs, were also carried out with various community subgroups in Kalulu Forest such as the headmen, indunas and area councillor, women from the Misamba Women’s Club and a group of 21 selected community members who provided information on how they make a livelihood and operate and interlink with other stakeholders.

The researcher used a voice recorder and a video camera to capture the data. The researcher hired a research assistant who taped and recorded the discussions.



Fig V: THE RESEARCHER IN A MATERIAL WRAPPER CONVERSING WITH TWO OF THE HEADMEN BEFORE AN FGD



Fig VI: MEMBERS OF THE COMMUNITY CONTRIBUTE TO THE FGD



Fig VII: AREA WARD COUNCILLOR MR. EMMANUEL MBEWE MAKING A CONTRIBUTION

2.0.4 Desk Research

Numerous documents were made available by the FD, KMC, LWS and WLECZ. These provided excellent contextual, procedural and technical information for the final report.

2.0.5 Administering Structured Questionnaires

The questionnaires were distributed to both technocrats at the FD and the squatters of Kalulu Forest. Generally the questionnaires focused on:

- i) Vital information on each person interviewed
- ii) Knowledge of the dangers deforestation practices
- iii) Livelihoods and incomes
- iv) Access to information and communication
- v) Willingness to work with other stakeholders to protect the environment

20 users from each section were conveniently/accidentally chosen from the six sections. This was because it was difficult to get an exact sampling frame. Altogether a total of 120 questionnaires were administered, 20 in each section. The researcher hired two assistants who helped in the distribution of the questionnaires.

Respondents were chosen either at the water pump where every third person who came to draw water was interviewed, community clubs, path ways, farm fields and the FRA depot. Respondents approached willingly to the questions asked.

A total of 11 questionnaires were distributed at both the provincial and district officers of the FD. Only the technocrats and not the supporting staff received a questionnaire.

All the questionnaires were pre-coded to facilitate analysis with the SPSS program.

2.0.6 Attending Community Club Meetings

The researcher attended some of the club meetings held in the community. Most of these clubs were agrarian based support clubs.

2.1 Data Analysis

In keeping with the multi pronged approach to data collection, data analysis was also multifaceted. In-depth interviews were analyzed according to responses of how stakeholders perceive issues of forest management. The process of analysis was a deductive one.

FGDs and club meetings provided information that was largely spontaneous except for a few responses which might have been biased due to the presence of the researcher. Analysis was sometimes direct and other times deductive.

The structured questionnaire was scientifically analyzed using the computerized and pre-coded Statistical Package for Social Sciences (SPSS). Direct observation, club meetings and documents also provided direct information.

The data was categorized according to:

- Contextual Information
- Conceptual, technical and organizational information
- Issues of community participation in forest management
- Socio-economic issues impacting on forest management
- Communication strategies used by both the FD and the community

2.2 Limitations of the Study

The practical attachment to Kalulu Forest Reserve was successful in obtaining information from a wide spectrum of stakeholders. However, the researcher experienced some constraints such as:

- 1) The presidential, parliamentary and local government elections were held on the 20th of September, 2011. During the run up to the elections, many of the headmen and indunas were busy holding public meetings and attending political rallies. Furthermore, there was a lot of uncertainty in the run up to the elections and the researcher found it difficult to carry out a number of investigations as there were fears of violence. As a result, a number of FGDs and in-depth interviews which had been organized by the researcher were delayed, postponed or cancelled altogether.

Some of the squatters feared that being an election year, giving of information would only come back to haunt them and led to victimization which in turn would led to the loss of their farming land.

- 2) Two of the top personnel at the FD who would have been cardinal to the study were away. One was in the United Kingdom pursuing further studies whilst the other was busy attending sittings for the proposal of the UN-REDD+ in Lusaka and could not make time to see and speak to the researcher. Further, the researcher's direct supervisor at the FD, who was extremely helpful in the investigations, left for a new employment opportunity during the second month of the attachment.
- 3) There is no public transport in Kalulu. The nearest form of transport from Kalulu into Kabwe town is at Mukobeko Prison which is approximately 70 kilometres from the forest if one enters from the east side. Thus the researcher was often forced to use transport from the FD which was marked with a GRZ number plate. This at times led people into feeling a wave of mistrust as the researcher was sometimes viewed as an official from the FD whose only intent was to see how best the squatters could be removed from the forest.
- 4) As a natural consequence of being a "guest", the researcher's status was that of being an "accepted observer" to meetings and other activities. This may have biased a few of the responses obtained from the squatters.
- 5) The researcher had a sample size of a hundred and twenty (120) respondents and had initially intended for there to be an equal representation of sixty (60) men and (60) sixty women. Unfortunately this was not the case as some of the women asked to take part in the research refused to fill in questionnaires stating that they had to seek permission from their male spouses in case of problems that may arise in future. Other women whose husbands had already filled in questionnaires stated that they could not take part in the exercise as they felt their spouses answers were a representation of their own. Thus the researcher ended up having more males than females take part in the research. The number of males interviewed males was seventy (70) whilst the number of females was fifty (50).

CHAPTER THREE

CONCEPTUAL FRAMEWORK

3.0 Conceptual and Theoretical Framework

This chapter looks at the concepts and theories that are deemed relevant to a given research. The theories that are attached to this study are of extreme relevance as they provide a coherent framework for making sense out of various observations carried out during the research.

For the purpose of this study, the concepts below have been defined and operationalised as follows:

Deforestation- This is the removal of a forest or stand of trees where the land is thereafter converted to none forest use. Examples of deforestation include conversion of forestland to farms, ranches or urban use.

Climate Change- Any change in climate overtime, whether due to natural variability or as a result of human activity (*Organisation for Economic Co-operation and Development 2006: 12*)

Global Warming- The depletion of the ozone layer due to the emission of Green House Gases (GHG)

Diameter Breast Height – This is the diameter at which a tree is measured at 1.3 meters above the ground level on the uphill side of the tree. For trees with larger buttresses, a point above the main flare buttresses is often used for the measurement of diameter.

Protected Forest Area – An area permanently set aside from production in order to protect the ecosystem. Protected forests are protected by law. In Zambia, both local forests and national forests are deemed protected areas where most of the principal characteristics and key elements of native ecosystems such as complexity, structure and diversity are present whilst those on customary land are under the authority of the traditional chiefs but the FD has to license any commercial cutting.

Squatters – These are people who knowingly or unknowingly, occupy land without legal permits

Cutting License – This is a legal permit issued by the FD allowing forest management or harvesting activities to occur on state land.

Sustainable Forest Management – This is the process of managing forests to achieve one or more clearly specified objectives of management with regard to the production of a continuous flow of desired forest products and services, without undue reduction of its inherent values and future productivity and without undue undesirable effects on the physical and social environment (*The Sustainable Forestry Handbook 2007: 4*)

Joint Forest Management – This is a strategy of managing forest resources by engaging those that live around and benefit from the forest (*Joint Forest Handbook 2010: 3*)

Forest Staff – Staff employed by the MTENR and are in charge of carrying out the forest based operations. They have received either formal or informal training in Forestry.

Mass Media – Communication media such as radio, television, newspaper, computers, books, magazines, pamphlets, posters and brochures which is professionally produced and distributed on a mass/wide scale.

Participatory Communication– Communication that allows for the full participation of the squatters, the FD and various stakeholders.

Free Communication – The process by which the squatters are able to communicate with the FD and all cardinal stakeholders without any communication obstacle such as language, shyness, inferiority complex and a lack of trust. It also allows for the stakeholders who are in-charge of the forest to give their views and concerns about its well-being.

3.1 Cognitive Dissonance Theory

This theory's main proponent was Leon Festinger, who established its conception in 1957. The theory gives a general explanation as to why people tend to be uncomfortable towards certain things based on personal past experience as well as pre-existing beliefs, attitudes and thoughts. The Cognitive Dissonance Theory states that people tend to withdraw and shut out situations that do not make them feel comfortable.

According to Leon Festinger, there are three types of relationships which make up this theory:

- a) **Consonant Relationships** – This is where the individual, community or organization feel comfortable in engaging in a relationship because they are comfortable with the other party and there is mutual trust

- b) **Dissonant Relationships** – Under this type of relationship, individuals, communities and organizations do not feel comfortable about being in a relationship or engaging in any form of union as there is no trust. Each feels that the other may have underlining and unexposed intentions of misleading and further more betraying them. Furthermore, each feels that their suggestions and ideas are neither heard nor respected by the other party.
- c) **Irrelevant Relationships** – In this relationship, two elements have nothing in common. They have no union set. They may not resent each other but their absence or presence means nothing to one another.

The Cognitive Dissonance Theory outlines a selection process that people go through in order to reduce or further bring about discomfort.

- i) **Selective Exposure** – This stage states that in order to feel comfortable with new ideas, trends and information, people tend to expose themselves to those that are not too far from ideas, trends and information that they already know and are compatible with their beliefs and actions. In the event that they expose themselves to ideas that are not of their belief and do not suit their current situations, they quickly revert to that which they know.
- ii) **Selective Attention** – Here people pay attention to issues that they know best or issues that they are most comfortable with; be it in application or just mere discussion. Issues that are brought up and do not bear a message that is of any interest to the listener, they do not pay attention.
- iii) **Selective Interpretation** – The nature of almost every individual is not only to gather information but further analysis and interpret it in a way that is most in conformity with their lives. However, the opposite of this is that people may also interpret the knowledge in a way that is not in line with their beliefs and ideas and thus reject it altogether.
- iv) **Selective Retention** – This stage has to do with how people choose to remember and retain only that which seems to be advantageous and can easily relate to their beliefs.

Through this study, the researcher sought to establish the extent to which squatters feel uncomfortable in engaging with the FD in any conservation activities in Kalulu. The researcher further examined by the use of this theory if the squatters found having a relationship with the FD worthwhile and if the selection process in implementing new ideas brought about 'positive' selection retention.

The researcher tried to establish if the squatters were comfortable in having a relationship with the FD or if they simply shut down each time members of the FD department were around due to pre-existing beliefs that the FD was not interested in the peoples well fare and were only focused on the agenda of having the squatters removed from the forest thus leading to a high level of mistrust.

3.2 The Malthusian Theory

Thomas Malthus was the father of the Malthusian Theory which envisioned a conflict between the contours of expansion of basic human want due to an ever growing population which would inevitably put pressure on existing natural resources.

Wiley (1966: 26) states that Malthus's main concern is centred in the simple problem of obtaining enough food, clothes and shelter to satisfy growing human needs. As result, its major emphasis is on the available supply of land and its capacity to produce food, fibres, fuel, forest products, minerals and related goals required by man to satisfy his basic needs.

In order to attack these problems, Malthus found it necessary to simplify their analyses by introducing certain basic assumptions as to the nature of the phenomena. One of these assumptions was that basic human needs will continue to expand as population increases. The other assumption was that the fund of resources, such as forests, wild life and minerals, that may be used to satisfy these needs, are specifically limited. In particular, the limited resources concepts is based on the assumption that man's ultimate source of livelihood is the physical earth.

The earth can provide only a limited quantity of resources, such as minerals, water, forests and the components of soil fertility that can be used to provide sources of livelihoods. When those stocks are exhausted and destroyed, man is simply going to be deprived of goods and services whose production depends on their use. Or in renewable resources such as sunshine and rain employed in agriculture, deprivation will begin whenever annual increments are exceeded by human demands.

Malthus, who was among the first to develop and popularize the scarcity concept, felt that humans would go ahead utilizing available land until one day perhaps rather suddenly he would come to the end of that conquest and would be faced with the necessity of reducing per capital food and clothing inputs for the growing numbers. Since Malthus saw no way of halting the existing "population explosion" the ultimate

consequence to the human population certainly appears to be disastrous. The Malthus role of diminishing returns has appeared in forests more than any other natural resources. (*Keeley and Scones, 2003:40*).

The Malthusian theory examines two different types of resources. The first are fund resources such as coal and petroleum which may be used only once and cannot be renewed and the last are the flow resources such as rainfall and sunshine which are renewed continuously. In the former, man considers himself as the custodian of a storehouse in which valuable stockpile of commodities are handed. Conservation of the flow resources obviously presents very different problems from the conservation of fund resources. A great many biological resources, such as forests, fish and game, maybe be exploited almost to the point of exhaustion. However, the stock of these resources may be renewed through proper management practices.

Trees and forests have the many qualities of both the fund and flow resources and thus present peculiarly complex problems. For example, forests will suffer the fate of fund resources if removed by deforestation. As flow resources, forests may have their ecological productivity reduced or depleted and yet still be capable of being restored to their original productivity through proper managements practices.

The conservation of fund resources involves almost inevitably, some postponement of current consumption. In recognition of future needs, with flow resources, on the other hand, the primary problem seems to be obtaining maximum yields without seriously impairing the productivity of the resources. From the economic point of view, the conservation of fund resources is primarily a matter of weighing present and future needs and regulating the rate of exploitation accordingly and diminishingly waste as much as possible.

The major characteristic of flow resources is that man can do much to alter their rate of flow. Humans, for example, can choose the rate at which he cuts trees and clears forests whilst taking into consideration both with projects and strategies that can control the rate of deforestation which in turn affects the components of soil, soil erosion and the quantity of the water table in the ground below.

With the use of this theory, the researcher was able to analyze how the population of Kalulu Forest, which has grown from 97 in 1996 to over 5000 in 2011, has exerted more pressure on the forest resources. An attempt to establish the extent to which proper management practices in the conservation of this flow resource by the squatters and the FD was also made.

3.3 Communication

Communication is the process of exchanging information and ideas. It involves the sending of a message, by the sender, through an appropriate medium to a receiver who then gives feed-back; this communication can either be verbal or non-verbal. As an active process, communication involves encoding, transmitting and decoding intended messages. It can also be defined as the transmission of information, ideas, emotions and skills by the use of different symbols, words, pictures, figures and graphs.

Previous studies have indicated that access to information; education and participatory communication are effective in reducing deforestation. In the absence of very little alternatives for a population that is heavily reliant on wood and clears forests for its many forms of subsistence without any plausible solutions or practices that re-vitalize the environment, education and communication are critical in minimizing the cutting down of trees. For example, in 1998 the Government of Brazil issued a decree which created simplified norms for community forestry management making it easier for small producers and communities to sell timber legally.

Earlier the Brazilian Forestry Code of 1965 had prohibited the harvest and commercialization of timber without a technical management plan. Such plans were feasible only on a large scale and at substantial cost. In May 1999, an organized forum with federal and state environmental organizations through the Institute of Environmental Protection of the State of Amazonas discussed the legalization of timber extraction, via the simplified norms. As a result, they adopted the goal of implementing community forest management in areas where logging was a traditional practice, where there were high levels of illegal logging and where communities expressed interest. They used participatory communication methods to delineate community management areas and train community members in the new norms. Local knowledge was incorporated and the people were viewed as participants in the program (*Environmental Governance and the Emergence of Forest Based Social Movements*, 2008: 33).

A new and rapidly emerging part of communication is Development Communication which is the integration of strategic communication in development projects. Strategic Communication is a powerful tool that can improve the chances of success of development projects. It strives for behaviour change not just information, education or raising awareness. While the latter are necessary ingredients of communication,

they are not sufficient for getting people to change long-established practices and behaviours.

Development Communication is a specialist field of communications that has been, as earlier stated, emergent over the last decade. It is characterized by an interdisciplinary approach and is a fusion of contemporary social, anthropological, development, communication and social marketing theory and practice. Development Communication puts knowledge and choice at the centre of the agenda and is distinguished by:

- People's rights to a voice
- People's rights to information
- Freedom of all communication channels
- Participation
- Ownership of knowledge
- Accountability of governments and societies
- People's improved ability to put informed choices into practice

(Kent Sidel: 1993)

All development requires some kind of behaviour change on the part of stakeholders. Research shows that changing knowledge and attitudes does not necessarily translate into behaviour change. In order to effect behaviour change, it is necessary to understand why people do what they do and understand the barriers to change or adopting new practices. It is not enough to raise awareness of the "benefits", it is critical to understand peoples' barriers or the "costs" they perceive such a change would entail.

Well-conceived, professionally implemented communication programs that are tied directly to reform efforts or development project objectives that bring understanding of local political, social and cultural realities to bear in the design of development programs can make a difference between project's success and failure.

3.3.1 Participatory Communication

Participation and communication are terms with broad and multifaceted connotations, trying to define them specifically are a difficult task. Even harder is providing a widely acceptable definition of participatory communication. Participatory Communication is not just the exchange of information and experiences but also the exploration and generation of knowledge aimed at addressing situations that need to be improved.

Thus, to be genuinely participatory and truly effective, communication should occur among all parties affected, ensuring all have similar opportunities to influence the outcome of the initiative.

The participatory communication paradigm does not call for a replacement of the basic communication functions associated with information dissemination, but rather broadens its boundaries to include more interactive ways of communicating. This new conception contains functions of both communication modes: the monologic and the dialogic. When the two are fully understood and properly applied, if needed combined together, development communication is used to its fullest advantage.

3.3.1.1 Trends in Participatory Communication

The discipline of development communication, both as theory and as practice, emerged closely interconnected with the growing 'development' industry. From the outset development support communication, program support communication, communication for development, or as so often called, development communication, has been seen as a strategic tool to persuade people to change and enhance development processes. Many communication models have informed the field. The early models, such as Lasswell's communication theory of 1948, were linear in their understanding of communication and were understood as a transfer of information, leading to foreseeable step-by-step change processes. These processes were usually identified with changes in behaviours much in line with the development thinking of the modernization paradigm. Persuasion theory, originating from the advertising industry, also became a strategy to achieve information transfer (*Participatory Communication; A Practical Guide 2009: 17*)

Throughout the 1970s and 1980s, strategic communication approaches to enhance individual behaviour change evolved to be known as Behaviour Change Communication (BCC). BCC is associated closely with social marketing.

Social marketing strategies are a means to promote particular behaviours or social norms via communication interventions. Social marketing is widely used in health communication, including family planning, and more recently in HIV and AIDS communication. In these early models of strategic communication, there were no participatory elements. The assumption was that the power of communication to enhance development was in the correct crafting of the content and in the adequate targeting of audiences. The goal was individual behaviour change.

Two models of communication came to dominate. First, the diffusion model of communication emerged, which relies heavily on the practice and theory of Everett Rogers (1962), emerged. Secondly, during the 1950s, experiences with participatory communication first appeared when Brazilian adult educator Paulo Freire worked with adult literacy campaigns among the poor peasants in North-eastern Brazil. Freire's original literacy work empowered landless peasants to formulate their own demands for a better life and to liberate themselves from oppressive conditions. From this experience, he grew into one of the most influential proponents for participatory communication theory and practice. Central to this line of thinking was the emphasis on letting the stakeholders get involved in the development process and determine the outcome, rather than imposing a pre-established, that is already decided by external actors, outcome.

By the early 1990s, budget line items for Information, Education and Communication (IEC) activities began to be incorporated more systematically within development projects. Typically these activities are non participatory in approach, emphasizing dissemination of information via the production of audio-visual or print materials.

From the outset the focus of participatory communication was on dialogical communication rather than on linear communication. The emphasis was on participatory and collective processes in research, problem identification, decision making, implementation, and evaluation of change (*The Role of Communication in Large Infrastructure 2006: 3*)

Most recently participatory approaches to communication have reinforced the emphasis on structural and social change. A broad-based policy debate initiated by the Rockefeller Foundation in 1997 and pursued by the Communication for Social Change Consortium in subsequent years has focused on structural inequality and social transformation. The "Rockefeller process" led to a definition of communication for social change as "a process of public and private dialogue through which people themselves define who they are, what they need and how to get what they need in order to improve their own lives. It utilizes dialogue that leads to collective problem identification, decision making, and community-based implementation of solutions to development issues" (www.communicationforsocialchange.org)

Another line of thinking within development communication focuses on life skills development. This deals with the issues of developing core competencies required to

engage actively as a citizen in society. This approach developed through the 1990s with a close connection to formal and informal education. Areas such as health education, civic education, income generation, and human rights are the core competencies associated with life skills development, and the forms of communication are didactic and face-to-face. Life skills development initiatives are performed in both formal and informal educational contexts.

Through this theory, the researcher tried to find out if the environment of media stimulates dialogue and empowerment to the squatters of Kalulu forest. The nature of media: from electronic to face-to-face, type of media: from folk tales to satellite communication, levels of media: be it local to national, institutional characteristics of media: from public to private and economic logic informing the media: from commercial media to non profit media, were all analyzed and evaluated.

3.4 The Diffusion of Innovation Theory

Development means change and the geography of development is basically concerned with the spatial diffusion of innovation- the spread of new ideas, the adoption of techniques and the establishment of new forms of production, all of which involve changes in human distributions and movements and in patterns of human activity. (*Spatial Aspects of Development 1974: 5*)

The diffusion of innovation theory is that the work of two American sociologist namely E. Rogers and F. shoemaker (1971). The main emphasis of the diffusion of innovation theory is on the communication process as a new idea or product becoming known and being used by a specific target group. The study by Rogers and Shoemaker focuses on the communication stages through which farmers had to pass in adapting agricultural innovations. These stages include;

- i. Awareness
- ii. Interests and Evaluation
- iii. Adoption or rejection of innovation

This approach categories individuals in groups depending on how easily new innovations are adapted. These groups are categorized into early adopters, early majority, late majority and laggards.

The failure of adopting new innovations was attributed to psychological factors and communication was given the role of helping with the removal of that psychological prejudice so that a climate of change is created, which could lead to greater acceptance of innovations and therefore the promotion of the innovation. However, these innovations should not ignore the importance of norms, values and beliefs as they play an important part on how well diffused ideas and practices are in a society. For example, a study carried out in a south Indian village revealed that social norms of behaviour are observed and practiced from one generation to another and so no one calculates their moves on how they should behave every five minutes but they simply follow the norms. It is the most natural thing for the villagers to do as they have internalized the norms and this is especially sustainable if the background environment remains constant. It will not be sustainable if the social environment changes suddenly (*Jodha: 1986*).

Similarly, the above mentioned process of communication can be applied to deforestation communication messages, where the innovation could either be on the planting of trees, civic education on the discrimination of cutting down of trees for timber. The theory can then be applied to the communication messages by using the stages of awareness, interest, evaluation and either rejection or acceptance of the innovation. Most deforestation communication campaigns and messages use the diffusion theory of innovation to create awareness about deforestation.

It should be noted that this theory of innovation should encompass not only the local or rural people but also urban people who constantly support these activities by buying charcoal for household use and Lumber companies who cut the trees for timber, furniture, buildings and so on. The style and height at which trees are cut is also a point of concern.

With the use of this theory, the researcher tried to establish as to whether or not the concept of anti- deforestation practices as an innovation has seen positive results. The research further tried to analyze if the innovation was suitable for the current scenario in Kalulu or if there were many socio-economic barriers that hinder the achievement the Diffusion of Innovations manifest goals. The researcher tried to examine if deforestation campaigns are innovative enough to take into account the fact that they need to be revolutionized from time to time, especially in the realm of communication strategies, in order to suit current global and local social, political and economic trends. Further, the Diffusion of Innovation Theory is of great importance as it helps us

to understand the processes that people go through before they can adapt to new messages of deforestation.

3.5 Sustainable Development Theory

Sustainable development has become a widely recognized goal for human society ever since deteriorating environmental conditions in many parts of the world indicate that its sustainability may be at stake.

One of the most commonly cited definitions stresses the economic aspects by defining sustainable development as “economic development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (*Indicators for Sustainable Development: Theory, Method, Applications 1999: 15*). Another takes a broader view by defining sustainable development as “the kind of human activity that nourishes and perpetuates the historical fulfilment of the whole community of life on earth.

3.5.1 Sustainable Forest Management

Sustainable Forest Management (SFM) has been described as forestry’s contribution to sustainable development. This is development which is economically viable, environmentally benign and socially beneficial, and which balances present and future needs (*The Sustainable Forestry Handbook 1999: 4*).

Interactions between flora and fauna in a forest ecosystem are complex and often poorly understood. The consequences of actions taken today may only show up in 50 to 100 years’ time.

SFM as a dynamic and evolving concept aims to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations (*Sustainable Forest Management : Biodiversity and Livelihoods 2010 : 8*).

The General Assembly of the UN in 2007 stated that SFM characterized seven key elements:

- i) Extent of forest resources
- ii) Forest biological diversity
- iii) Forest health and vitality

- iv) Productive health and vitality
- v) Protective functions of forest resources
- vi) Socio-economic functions of forests
- vii) Legal, policy and institutional framework

With the use of this theory, the researcher tried to evaluate if the FD had initiated any sustainable forest projects and the communication strategies that were being utilized in ensuring adherence to these practices by the community. The research also tried to establish as to whether or not the squatters of Kalulu had engaged themselves in any traditional or modern forms of sustainable forest practices.

CHAPTER FOUR

LITERATURE REVIEW

4.0 Introduction

This chapter deals with the analysis of written works that are regarded as having literally merit on the subject of discussion. It can take a classical, historical, documented and heretical view of both past and present writings and events. For the purpose of this study, the researcher took a historical view of deforestation.

According to Alastair Brown in his book *Deforestation changes Rainfall*, deforestation is the removal of a forest or stand of trees where the land is thereafter converted to none forest use. Examples of deforestation include conversion of forestland to farms, ranches, or urban use. Deforestation is often misused to describe any activity where all trees in an area are removed. However, in temperate climates, the removal of all trees in conformance with suitable forestry practices is correctly described as a regeneration harvest.

Deforestation occurs for many reasons: trees are used for household charcoal or sold, for fuel or as timber. While cleared land is used as pasture for livestock, plantations of commodities, and settlements. The removal of trees without sufficient reforestation has resulted in damage to habitat, biodiversity loss and aridity. It also has adverse impacts on bio-sequestration of atmospheric carbon dioxide. Deforestation has also been used in war to deprive an enemy of cover for its forces and also vital resources. Deforested regions typically incur significant adverse soil erosion and frequently degrade into waste land. Disregard or ignorance of intrinsic value, lack of ascribed value, lax forest management and deficient environmental laws are some of the factors that allow deforestation to occur on a large scale (*Trees for Tools, Trees as Text*, 1995:7).

In many countries, deforestation, both naturally occurring and human induced, is an ongoing issue. Deforestation causes extinction, changes to climatic conditions, desertification, and displacement of populations as observed by current conditions and in the past through the fossil record.

Forests and wetlands are of vital importance to man as they contribute to the stability of the life-support system to a greater extent than is indicated by the area occupied by these ecosystem types. For example, forests now only occupy 30 percent of the land area of the entire globe but constitute 90 percent of the biomass, which is the amount

or weight, of living matter (*Growth without Ecodisaster* 1979: 268). For this reason, forests are important carbon sinks and climate stabilizers because large trees soils take up and store large amounts of carbon dioxide, CO₂. Forests, just like the ocean, are a buffer against rapid changes in atmospheric CO₂ content. In arid regions, woody vegetation also tends to reduce reflectance of solar radiation and thereby enhances rainfall (*Growth without Ecodisaster* 1979: 273). Forests also function as moderators or governors of the downhill flow of water in the hydrological cycle.

Wetlands such as swamp forests have a very special value in maintain global cycles of carbon, nitrogen and sulphur. Wetlands also help to maintain water storage reservoirs that help maintain ground water levels. They also help to act as filters for agricultural and industrial chemicals and act as a source for food and wildlife. Further, wetlands contribute to scenic open space (*Rural-urban Competition for Water* 1960: 1332-1334). Thus it is important to note that wetlands should not be converted to something else unless that something contributes more to life-support and the quality of human existence.

4.1 History of Deforestation from a Global Prospective

The collapse of the Carboniferous Rainforest was an event that occurred 300 million years ago. Climate change devastated tropical rainforests causing the extinction of many plant and animal species. The change was abrupt, specifically, at this time climate became cooler and drier, conditions that are not favourable to the growth of rainforests and much of the biodiversity within them. Rainforests were fragmented forming shrinking 'islands' further and further apart. This sudden collapse affected several large groups, effects on amphibians were particularly devastating, while reptiles fared better, being ecologically adapted to the drier conditions that followed.

Rainforests once covered 14 per cent of the earth's land surface but now they cover a mere 5 to 6 per cent and experts estimate that the last remaining rainforests could be consumed in less than 40 years (*Trends in Ecology and Evolution*, 2008: 469).

Small scale deforestation was practiced by some societies for tens of thousands of years before the beginnings of civilization. The first evidence of deforestation appears in the Mesolithic period, which is the middle part of the Stone Age. It was probably used to convert closed forests into more open ecosystems favourable to game animals. With the advent of agriculture, larger areas began to be deforested, and fire became the prime tool to clear land for crops. Mesolithic foragers used fire to create

openings for red deer and wild boar. In Great Britain, shade-tolerant species such as oak and ash are replaced in the pollen record by hazels, brambles, grasses and nettles. Removal of the forests led to decreased transpiration, resulting in the formation of upland peat bogs. Widespread decrease in elm pollen across Europe between 8400–8300 BC and 7200–7000 BC, starting in southern Europe and gradually moving north to Great Britain, may represent land clearing by fire at the onset of Neolithic agriculture (*Of Men and Meadows*, 1972 : 132 – 144).

The Neolithic period, which was the last part of the Stone Age, saw extensive deforestation for farming land. Stone axes were being made from about 3000 BC not just from flint, but from a wide variety of hard rocks from across Britain and North America as well.

Evidence of deforestation has been found in Minoan Crete; for example the environs of the Palace of Knossos were severely deforested in the Bronze Age (*Of Men and Meadows*, 1972: 154).

4.1.1 Pre-industrial history

Throughout most of history, humans were hunter gatherers who hunted within forests. In most areas, such as the Amazon, the tropics, Central America, and the Caribbean, only after shortages of wood and other forest products occur are policies implemented to ensure forest resources are used in a sustainable manner.

In ancient Greece, Tjeered van Andel 1997, summarized three regional studies of historic erosion and alleviation and found that, wherever adequate evidence of a high population exists, a major phase of erosion follows. The thousand years following the mid-first millennium BCE saw serious, intermittent pulses of soil erosion in numerous places.

Easter Island has suffered from heavy soil erosion in recent centuries, aggravated by agriculture and deforestation. According to Jared Diamond, the disappearance of the island's trees seems to coincide with a decline of its civilization around the 17th and 18th century. He attributed the collapse to deforestation and over-exploitation of all resources.

The famous silting up of the harbour for Bruges, which moved port commerce to Antwerp, also followed a period of increased settlement growth, and apparently of deforestation, in the upper river basins. In early medieval Riez in Upper Province, alluvial silt from two small rivers raised the riverbeds and widened the floodplain,

which slowly buried the Roman settlement in alluvium and gradually moved new construction to higher ground; concurrently the headwater valleys above Riez were being opened to pasturage (*A History of Land Degradation in Medieval Europe*, 1996: 134 – 156).

A typical progress trap was that cities were often built in a forested area, which would provide wood for some industry. When deforestation occurs without proper replanting, local wood supplies become difficult to obtain near enough or to remain competitive, leading to the city's abandonment, as happened repeatedly in Ancient Asia Minor. Fuel needs, mining and metallurgy often led to deforestation in turn city abandonment.

With most of the population remaining active in the agricultural sector, the main pressure in most areas remained on land clearing for crop and cattle farming. Enough wild green was usually left standing for wildlife to remain viable. The elite's, nobility and higher clergy, had protection of their own hunting privileges and game and often protected significant woodlands.

Major parts in the spread of the population were played by monastical pioneering and some feudal lords recruiting farmers to settle by offering relatively good legal and fiscal conditions. Even when speculators sought to encourage the development of towns, settlers needed an agricultural belt around or sometimes within defensive walls. When populations were quickly decreased by causes such as the Black Death or devastating warfare, this often led to settlements being abandoned. The land was reclaimed by nature, but the secondary forests usually lacked the original biodiversity (*Historical Consequences of Deforestation: Easter Island* 2009: 31).

From 1100 to 1500 AD, significant deforestation took place in Western Europe as a result of the expanding human population. The large-scale building of wooden sailing ships by European coastal naval owners since the 15th century for exploration, colonization, slave trade—and other trade on the high seas consumed many forest resources.

Piracy also contributed to the over harvesting of forests, as in Spain. This led to a weakening of the domestic economy after Columbus' discovery of America, as the economy became more dependent on colonial activities such as mining, cattle, plantations and trade.

In *Changes in the Land* (1983), William Cronon analyzed and documented 17th-century English colonists' reports of increased seasonal flooding in New England during the

period when new settlers initially cleared the forests for agriculture. They believed flooding was linked to widespread forest clearing upstream. The massive use of charcoal on an industrial scale in Early Modern Europe was a new type of consumption of western forests. Even in Stuart England, the relatively primitive production of charcoal had already reached an impressive level. Stuart England was so widely deforested that it depended on the Baltic trade for ship timbers, and looked to the untapped forests of New England to supply the need. Each of Nelson's Royal Navy war ships at Trafalgar 1805 required 6,000 mature oaks for its construction. In France, Colbert planted oak forests to supply the French navy in the future. When the oak plantations matured in the mid-19th century, the masts were no longer required because shipping had changed.

Cantor's summary of the effects of late medieval deforestation applies equally well to Early Modern Europe stated and explains that, Europeans had lived in the midst of vast forests throughout the earlier medieval centuries. After 1250 they became so skilled at deforestation that by 1500 they were running short of wood for heating and cooking. They were faced with a nutritional decline because of the elimination of the generous supply of wild game that had inhabited the now-disappearing forests, which throughout medieval times had provided the staple of their carnivorous high-protein diet. By 1500 Europe was on the edge of a fuel and nutritional disaster of which it was saved in the sixteenth century only by the burning of soft coal and the cultivation of potatoes and maize (*In Closing Civilization of the Middle Ages: The Life and Death of a Civilization*, 1993: 564).

4.1.2 Industrial era

In the 19th century, introduction of steamboats in the United States was the cause of deforestation of banks of major rivers, such as the Mississippi River, which experienced increased and more severe flooding as one of the negative environmental results. The steamboat crews cut wood every day from the riverbanks to fuel the steam engines. Between St. Louis and the confluence with the Ohio River to the south, the Mississippi became more wide and shallow, and changed its channel laterally. Attempts to improve navigation by the use of snag pullers often resulted in crews' clearing large trees 100 to 200 feet back from the banks. Several French colonial towns of the Illinois Country, such as Kaskaskia, Cahokia and St. Philippe, Illinois were flooded and abandoned in the late 19th century, with a loss to the cultural record of their archaeology (*Where Did all the Villages Go?*, 1997: 73-89).

The wholesale clearance of woodland to create agricultural land can be seen in many parts of the world, such as the Central forest-grasslands transition and other areas of the Great Plains of the United States. Specific parallels are seen in the 20th-century deforestation occurring in many developing nations.

4.2 Current Trends

Global deforestation sharply accelerated around 1852 (*The Future of Life* 2002: 85). It has been estimated by scientists at the geographic centre in Huston, that about half of the Earth's mature tropical forest, that until 1947 covered the planet, have now been destroyed. Some scientists have predicted that unless significant measures, such as seeking out and protecting old growth forests that have not been disturbed, are taken on a worldwide basis, by 2030 there will only be 10 per cent remaining, with another 10 per cent in a degraded condition. 80 per cent will have been lost, and with them hundreds of thousands of irreplaceable species (*The Future of Life* 2002: 133 -137). Estimates vary widely as to the extent of tropical deforestation but scientists estimate that one fifth of the world's tropical rainforest was destroyed between 1960 and 1990. They state that rainforests which 50 years ago covered 14 per cent of the world's land surface, now only cover 5 to 7 per cent, and that all tropical forests will be gone by the middle of the 21st century (*Encyclopaedia of Environmental Science* 2000 : 23).

A 2002 analysis of satellite imagery suggested that the rate of deforestation in the humid tropics was roughly 23 per cent lower than the most commonly quoted rates (*Determination of Deforestation Rates of the World's Humid Tropical Forests* 2002: 999). Conversely, a latest analysis of satellite images reveals that deforestation of the Amazon rainforest is twice as fast as scientists previously estimated.

A 2005 report by the United Nations Food and Agriculture Organization (FAO) estimates that although the Earth's total forest area continues to decrease at about 13 million hectares per year, the global rate of deforestation has recently been slowing (*FAO Report* 2005). Still others claim that rainforests are being destroyed at an ever-quickenning pace.

The London-based Rainforest Foundation notes that the UN figure is based on a definition of forest as being an area with as little as 10 per cent actual tree cover, which would therefore include areas that are actually savannah-like ecosystems and badly damaged forests (*World Deforestation Rates and Forest Cover Statistics 2000-2005*: <http://news.mongabay.com/2005/1115-forests.html>). Other critics of the FAO

data point out that they do not distinguish between forest types, and that they are based largely on reporting from forestry departments of individual countries, which do not take into account unofficial activities like illegal logging. Despite these uncertainties, there is agreement that destruction of rainforests remains a significant environmental problem. Up to 90 percent of West Africa's coastal rainforests have disappeared since 1900. In South Asia, about 88 per cent of the rainforests have been lost. Much of what remains of the world's rainforests is in the Amazon basin, where the Amazon Rainforest covers approximately 4 million square kilometres (*The Amazon Rainforest, 2003: 8*)

The regions with the highest tropical deforestation rate between 2000 and 2005 were Central America, which lost 1.3 per cent of its forests each year, and tropical Asia. In Central America, two-thirds of lowland tropical forests have been turned into pasture since 1950 and 40 per cent of all the rainforests have been lost in the last 40 years (*The Causes of Tropical Deforestation 2008 : 45*). Brazil has lost 90 to 95 per cent of its Mata Atlantica rainforest. Paraguay has been losing its natural semi humid forests in the country's western regions at a rate of 15.000 hectares. Paraguay's parliament refused in 2009 to pass a law that would have stopped cutting of natural forests (*Paraguay Farmland: <http://www.ventacamposparaguay.com.farmland.htm>*).

Madagascar has lost 90 per cent of its eastern rainforests. As of 2007, less than one percent of Haiti's forests had remained. Mexico, India, the Philippines, Indonesia, Thailand, Myanmar, Malaysia, Bangladesh, China, Sri Lanka, Laos, Nigeria, the Democratic Republic of the Congo, Liberia, Guinea, Ghana and the Côte d'Ivoire, have lost large areas of their rainforest. Several countries, notably Brazil, have declared their deforestation a national emergency.

The World Wildlife Fund's eco-region project catalogues habitat types throughout the world, including habitat loss such as deforestation, showing for example that even in the rich forests found in parts of Canada, such as the Mid-Continental Canadian forests of the Prairie Provinces, half of the forest cover has been lost or altered. Rates of deforestation vary around the world. In 2011, Conservation International listed the top 10 most endangered forests, characterized by having all lost 90 per cent or more of their original habitat, and each harbouring at least 1500 endemic plant species which are found nowhere else in the world (*Report on the World's 10 Most Threatened Forest Hotspots 2011: 4*).

Table I

Endangered forest	Region	Remaining forest habitat percent age	Predominate vegetation type	Notes
Indo-Burma	Asia-Pacific	5%	Tropical and subtropical moist broadleaf forests	Rivers, floodplain, wetlands, mangrove forests. Myanmar (Burma), Thailand, Laos, Vietnam, Cambodia, India
New Caledonia	Asia-Pacific	5%	Tropical and subtropical moist broadleaf forests	
Sundaland	Asia-Pacific	7%	Tropical and subtropical moist broadleaf forests	Western half of the Indo-Malayan archipelago including southern Borneo and Sumatra
Philippines	Asia-Pacific	7%	Tropical and subtropical moist broadleaf forests	Forests cover the entire country including 7, 100 islands
Atlantic Forest	South America	8%	Tropical and subtropical moist broadleaf forests	Forests along Brazil's Atlantic coast, extends to parts Paraguay, Argentina and Uruguay
Mountains of Southwest China	Asia-Pacific	8%	Temperate coniferous forest	
California Floristic	North America	10%	Tropical and subtropical dry broadleaf forests	
Coastal Forests of Eastern Africa	Africa	10%	Tropical and subtropical moist broadleaf forests	Mozambique, Tanzania, Kenya, Somalia

Madagascar and Indian Ocean Islands	Africa	10%	Tropical and subtropical moist broadleaf forests	Madagascar, Mauritius, Reunion, Seychelles
Eastern Afromontane	Africa	11%	Tropical and subtropical moist broadleaf forests Montane grasslands and shrub lands	Forests scattered along the east edge of Africa

Source: Conservation International, 2011

4.3 General Causes of Global Deforestation

There are many causes of contemporary global deforestation, including corruption of government institutions, the inequitable distribution of wealth and power, population growth and overpopulation, and urbanization (*Global Change, 2006: 1*).

Globalization is often viewed as another root cause of deforestation, though there are cases in which the impacts of globalization such as, new flows of labour, capital, commodities, and ideas, have promoted localized forest recovery (*Globalization, Forest Resurgence and Environmental Politics in El Salvador, 2006: 308*). In 2000 the FAO stated that the role of population dynamics in a local setting may vary from decisive to negligible, and that deforestation can result from a combination of population pressure and stagnating economic, social and technological conditions (*Marcoux, 2000*).

According to the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, the overwhelming direct cause of deforestation is the clearing of land to grow crops. Subsistence farming is responsible for 48 per cent of deforestation; commercial agriculture is responsible for 32 per cent of deforestation; logging is responsible for 14 per cent of deforestation and fuel wood removals make up five percent of deforestation (*UNFCCC, 2007: 81*).

The degradation of forest ecosystems has also been traced to economic incentives that make forest conversion appear more profitable than forest conservation. Many important forest functions have no markets, and hence, no economic value that is readily apparent to the forests' owners or the communities that rely on forests for

their well-being. From the perspective of the developing world, the benefits of forest as carbon sinks or biodiversity reserves go primarily to richer developed nations and there is insufficient compensation for these services (*The Economic Value of Forest Ecosystems*, 2003: 284).

Developing countries feel that some countries in the developed world, such as the United States of America, cut down their forests centuries ago and benefited greatly from this deforestation, and that it is hypocritical to deny developing countries the same opportunities: that the poor should not have to bear the cost of preservation when the rich created the problem (*Is there too much or too little natural forest in the Atlantic Zone of Costa Rica*, 2000: 495).

Experts do not agree on whether industrial logging is an important contributor to global deforestation (*Lessons from Economic Models*, 1999: 73). Some argue that poor people are more likely to clear forest because they have no alternatives, whilst others state that the poor lack the ability to pay for the materials and labour needed to clear forest. One study found that population increases due to high fertility rates were a primary driver of tropical deforestation in only eight per cent of cases (*Proximate Causes of Underlying Driving Forces of Tropical Deforestation 2002*: 143).

Some researchers have noted a shift in the drivers of deforestation over the past 30 years. Whereas deforestation was primarily driven by subsistence activities and government-sponsored development projects such as transmigration in countries like Indonesia and colonization in Latin America, India, Java, and so on, during late 19th century and the earlier half of the 20th century. But By the 1990s the majority of deforestation was caused by industrial factors, including extractive industries, large-scale cattle ranching, and extensive agriculture (*Tropical Forests: Regional Paths of Destruction and Regeneration in the Late 20th Century*, 2005: 17-22).

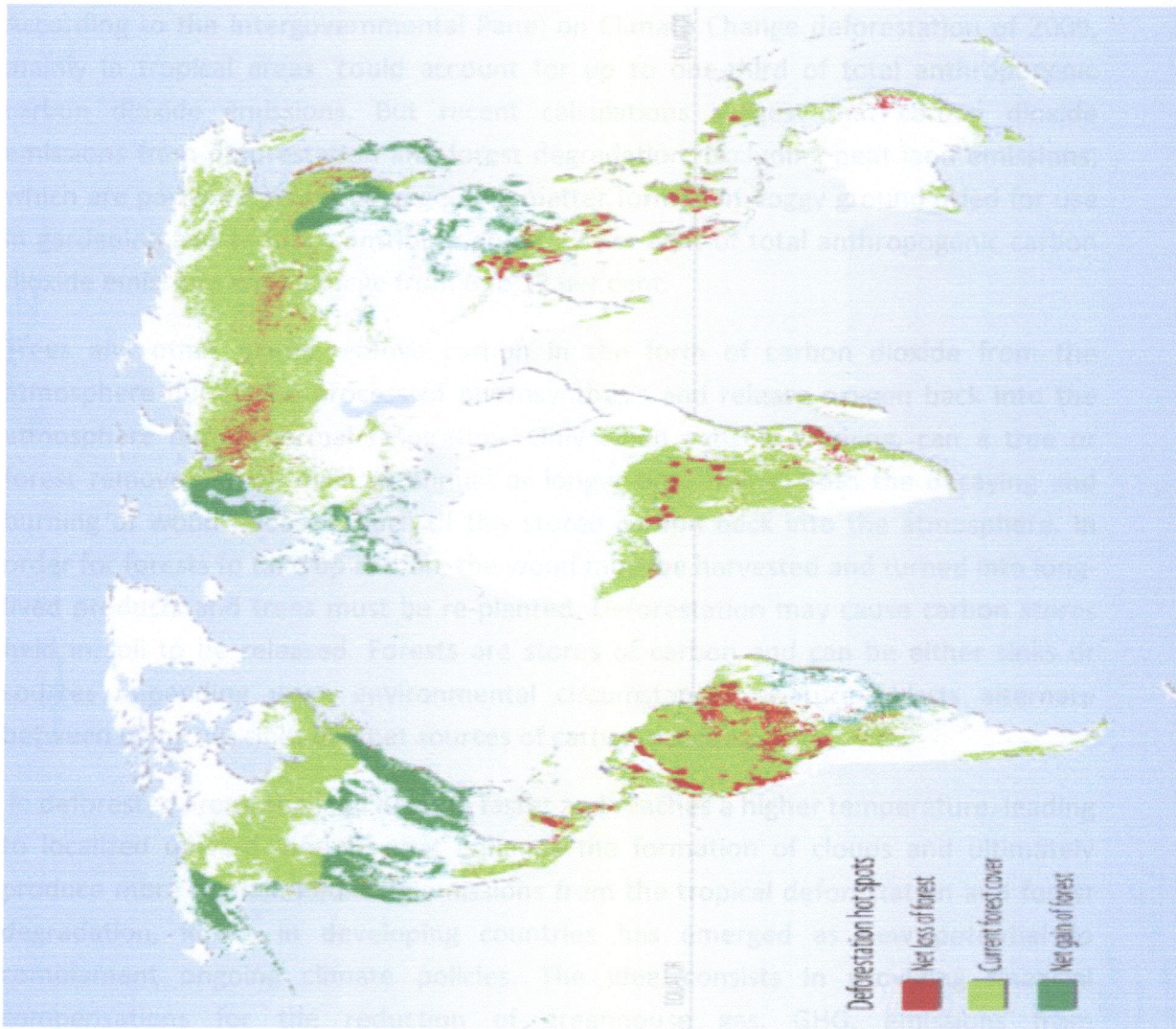


Fig VIII: Global Forest Cover and Deforestation Hot spots

Source: Sustainable Forest Management, Biodiversity and Livelihoods 2010: 1

4.4 Environmental Problems Caused by Deforestation

4.4.1 Atmospheric Problems

Deforestation is ongoing and is shaping climate and geography. Deforestation is a contributor to global warming, and is often cited as one of the major causes of the enhanced greenhouse effect. Tropical deforestation is responsible for approximately 20 per cent of world greenhouse gas emissions (*Tropical Deforestation and Greenhouse Gas Emissions, 2004: 982*).

According to the Intergovernmental Panel on Climate Change deforestation of 2009, mainly in tropical areas, could account for up to one-third of total anthropogenic carbon dioxide emissions. But recent calculations suggest that carbon dioxide emissions from deforestation and forest degradation, excluding peat land emissions; which are partly decomposed vegetable matter formed in boggy ground dried for use in gardening and as fuel, contribute about 12 per cent of total anthropogenic carbon dioxide emissions with a range from 6 to 17 per cent.

Trees and other plants remove carbon in the form of carbon dioxide from the atmosphere during the process of photosynthesis and release oxygen back into the atmosphere during normal respiration. Only when actively growing, can a tree or forest remove carbon over an annual or longer time frame. Both the decaying and burning of wood releases much of this stored carbon back into the atmosphere. In order for forests to take up carbon, the wood must be harvested and turned into long-lived products and trees must be re-planted. Deforestation may cause carbon stores held in soil to be released. Forests are stores of carbon and can be either sinks or sources depending upon environmental circumstances. Mature forests alternate between being net sinks and net sources of carbon dioxide.

In deforested areas, the land heat up faster and reaches a higher temperature, leading to localized upward motions that enhance the formation of clouds and ultimately produce more rainfall. Reducing emissions from the tropical deforestation and forest degradation, REDD, in developing countries has emerged as new potential to complement ongoing climate policies. The idea consists in providing financial compensations for the reduction of greenhouse gas, GHG, emissions from deforestation and forest degradation (*Bringing REDD into a New Deal for the Global Climate, 2007: 38-54*).

Rainforests are generally believed to contribute a significant amount of world's oxygen, but, it is now accepted by scientists that rainforests contribute little net oxygen to the atmosphere and deforestation will have no effect on atmospheric oxygen levels. However, the incineration and burning of forest plants to clear land releases large amounts of CO₂, which contributes to global warming. Scientists also state that, Tropical deforestation releases 1.5 billion tonnes of carbon each year into the atmosphere (*Deforestation and Land use in the Brazilian Amazon, 1993: 21*).

Forests are also able to extract carbon dioxide and pollutants from the air, thus contributing to biosphere stability.

4.4.2 Hydrological Problems

The water cycle is also affected by deforestation. Trees extract groundwater through their roots and release it into the atmosphere. When part of a forest is removed, the trees no longer evaporate away this water, resulting in a much drier climate. The dry soil leads to lower water intake for the trees to extract (<http://www.wrm.org.uy/deforestation/UNreport.html>). Deforestation reduces soil cohesion, so that erosion, flooding and landslides ensue.

Shrinking forest cover lessens the landscape's capacity to intercept, retain and transpire precipitation. Instead of trapping precipitation, which then percolates to groundwater systems, deforested areas become sources of surface water runoff, which moves much faster than subsurface flows. That quicker transport of surface water can translate into flash flooding and more localized floods than would occur with the forest cover (*Growth Without Ecodisaster?*, 1980: 97).

Deforestation also contributes to decreased evaporation, which lessens atmospheric moisture which in some cases affects precipitation levels downwind from the deforested area, as water is not recycled to downwind forests, but is lost in runoff and returns directly to the oceans. According to one study conducted by the Chinese Academy of Agricultural Sciences, in a deforested part of north and northwest China, the average annual precipitation decreased by one third between the 1950s and the 1980s.

Trees and plants in general, affect the water cycle significantly:

- Their canopies intercept a proportion of precipitation, which is then evaporated back to the atmosphere
- Their litter stems and trunks slow down surface runoff
- Their roots create macrospores – large conduits – in the soil that increase infiltration of water
- They contribute to terrestrial evaporation and reduce soil moisture via transpiration
- Their litter and other organic residue change soil properties that affect the capacity of soil to store water
- Their leaves control the humidity of the atmosphere by transpiring 99 per cent of the water absorbed by the roots moves up to the leaves and is transpired

As a result, the presence or absence of trees can change the quantity of water on the surface, in the soil, groundwater and in the atmosphere. This in turn changes erosion rates and the availability of water for either ecosystem functions or human services.

The forest may have little impact on flooding in the case of large rainfall events, which overwhelm the storage capacity of forest soil if the soils are at or close to saturation. Tropical rainforests produce about 30 per cent of our planet's fresh water (*How can you save the Rain Forest, 2006: 42*)

4.4.3 Soil Problems

Deforestation generally increases rates of soil erosion, by increasing the amount of runoff and reducing the protection of the soil from tree litter. This can be an advantage in excessively leached tropical rain forest soils. Forestry operations, such as the sale of timber, also increase erosion through the development of roads and the use of mechanized equipment.

China's Loess Plateau was cleared of forest a millennia ago. Since then it has been eroding, creating dramatic incised valleys, and providing the sediment that gives the Yellow River its yellow colour and that causes the flooding of the river in the lower reaches ,hence the river's nickname 'China's sorrow' (*Haggart and Ian, 2006:200*).

Removal of trees does not always increase erosion rates. In certain regions of southwest USA, shrubs and trees have been encroaching on grassland. The trees themselves enhance the loss of grass between tree canopies. The bare inter canopy areas become highly erodible. The US Forest Service, in Bandelier National Monument for example, is studying how to restore the former ecosystem, and reduce erosion, by removing the trees.

Tree roots bind soil together, and if the soil is sufficiently shallow they act to keep the soil in place by also binding with underlying bedrock. Tree removal on steep slopes with shallow soil thus increases the risk of landslides, which can threaten people living nearby. However most deforestation only affects the trunks of trees, allowing for the roots to stay rooted, negating the landslide (*Spatial Aspects of Development, 1974:33*).

4.4.4 Biodiversity Problems

Deforestation on a human scale results in declines in biodiversity and on a natural global scale is known to cause the extinction of many species (*Do we have Enough Forests 2001: 12*). The removal or destruction of areas of forest cover has resulted in a degraded environment with reduced biodiversity. Forests support biodiversity, providing habitat for wildlife. Moreover, forests foster conservation of medicinal plants and trees.

With forest biotopes being an irreplaceable source of new drugs such as taxol, deforestation can destroy genetic variations such as crop resistance irretrievably. Since the tropical rainforests are the most diverse ecosystems on Earth and about 80 percent of the world's known biodiversity could be found in tropical rainforests, removal or destruction of significant areas of forest cover has resulted in a degraded environment with reduced biodiversity.

It has been estimated that the world are losing 137 plants, animal and insect species every single day due to rainforest deforestation, which equates to 50,000 species a year. Others state that tropical rainforest deforestation is contributing to the ongoing holocene mass extinction (*Rainforest Facts: <http://www.rain-tree.com/facts.htm>*).

The known extinction rates from deforestation rates are very low, approximately 1 species per year from mammals and birds which extrapolates to approximately 23,000 species per year for all species. Predictions have been made that more than 40 per cent of the animal and plant species in Southeast Asia could be wiped out in the 21st century (*Biodiversity wipeout facing South East Asia, 2003: 56*)

Such predictions were called into question by 1995 data that showed that within regions of Southeast Asia much of the original forest has been converted to mono-specific plantations, but that potentially endangered species are few and tree flora remains widespread and stable (*The Future of Biodiversity, 1997:341*). Scientific understanding of the process of extinction is insufficient to accurately make predictions about the impact of deforestation on biodiversity. Most predictions of forestry related biodiversity loss are based on species-area models, with an underlying assumption that as the forest declines species diversity will decline similarly. However, many such models have been proven to be wrong and loss of habitat does not necessarily lead to large scale loss of species. Species-area models are known to over predict the number of species known to be threatened in areas where actual

deforestation is ongoing, and greatly over predict the number of threatened species that are widespread (*The Future of Biodiversity, 1995: 34*)

4.4.5 Economic Impact

Damage to forests and other aspects of nature could halve living standards for the world's poor and reduce global Gross Domestic Products (GDP) by about 70 per cent by 2050, a report concluded at the Convention on Biological Diversity (CBD) meeting in Bonn (*Nature Loss-A Hurt to the Global Poor 2008 : 189*). Historically, utilization of forest products, including timber and fuel wood, has played a key role in human societies, comparable to the roles of water and cultivable land. Today, developed countries continue to utilize timber for building houses, and wood pulp for paper. In developing countries almost three billion people rely on wood for heating and cooking.

The forest products industry is a large part of the economy in both developed and developing countries. Short-term economic gains made by conversion of forest to agriculture, or over-exploitation of wood products, typically lead to loss of long-term income and long-term biological productivity. West Africa, Madagascar, Southeast Asia and many other regions have experienced lower revenue because of declining timber harvests. Illegal logging causes billions of dollars of losses to national economies annually (*An Inquiry into Well-Being and Destitution, 1995:269*).

The new procedures to get amounts of wood are causing more harm to the economy and overpower the amount of money spent by people employed in logging. According to a study, in most areas, the various ventures that prompted deforestation rarely generated more than US\$5 for every ton of carbon they released and frequently returned far less than US\$1. The price on the European market for an offset tied to a one-ton reduction in carbon is 23 euro which is about US\$35.

Rapidly growing economies also have an effect on deforestation. Most pressure will come from the world's developing countries, which have the fastest-growing populations and most rapid economic industrial growth.

In 1995, economic growth in developing countries reached nearly 6 per cent, compared with the 2 per cent growth rate for developed countries. As our population grows, new homes, communities, and expansions of cities will occur. Connecting all of the new expansions will be roads, a very important part in our daily life. Rural roads promote economic development but also facilitate deforestation. About 90 per cent of the deforestation has occurred within 100 km of roads in most parts of the Amazon (*An Inquiry into Well-Being and Destitution 1995: 282*).

4.5 Deforestation in Africa

The threat of deforestation is real and looms large in the African horizons. Africa is one of the most negatively affected continents by the processes and effects of deforestation. The number of communities, countries and sub-regions within Africa whose livelihoods are being eroded on a continuous basis by locally generated deforestation processes is clearly a source of grave concern. Livelihoods in most of rural Africa is heavily reliant on limited and degrading soil, water and vegetation resources (*Free Market Environmentalism, 2001: 12*). There is mounting pressure, which unprecedented in history, on these resources with alarming consequences.

Several causes could be cited for such a state of affairs, but what is even more disturbing is the fact that only limited and sustained concrete efforts have been made on the African continent to counter both the processes as well as the consequences of deforestation. In short, the reality could be tersely put as one in which forces of deforestation have been insurmountable in the face of little or appropriate and inadequate response to prevent or minimize it.

Although it is true that there have been certain efforts aimed at counteracting deforestation, very few have been effective. For example, The Green Wall initiative launched in 1971 in Algeria had an objective of reforestation of 3 million hectares of land that has a dimension of 1500 kilometres length by 10 to 20 kilometres width. This initiative was later to be the backbone for the formulation of the project known as the 'Green Belt of Northern African Countries' in 1978. Similarly, the 'Green Belt for Nigeria' initiative that was formulated in response to the threats of deforestation that was detected using satellite imagery taken between 1976 and 1978 and between 1993 and 1995 which in fact led to declaration of these threats as emergency issues, has an objective of planting about 300 million trees on 240,000 thousand hectares (*The Green Wall for the Sahara Initiative, 2005: 1*).

The Green Wall for the Sahara project was initiated in 2005 at the fifth ordinary summit of the African Union (AU).

Some of the defining characteristics of past and existing efforts in Africa are that they have had initial conceptual bias or fault or have limited area coverage, are isolated, not coordinated, and therefore their impact on the fight of deforestation could not be commensurate with the needs.

4.5.1 Forests Governance and Decentralization in Africa

One of the most important drivers of deforestation in Africa is poor governance of forest resources, which leads to illegal practices, including conversion of forests to agricultural land (*Governing Africa's Forests in a Globalized World 2010 : 300*).

There is a broad consensus in international development and policy circles that decentralization and good governance are an inherent component of environmentally sustainable, pro-poor development. The trend since the 1980s and 1990s towards decentralization in Africa is in line with this thinking.

In its broad sense, decentralization involves the transfer of roles, responsibilities and power from the central authority or government to actors and institutions at lower levels in a political administrative and territorial hierarchy. Most countries in the African region embarked on the path of decentralization in the late 1980s and early 1990s as part of the Structural Adjustment Program (SAP) largely under the pressure of international donors and multilateral agencies, notably the World Bank (WB) and the International Monetary Fund (IMF).

Decentralization was initially conceived of primarily as a means to downsize the state, particularly at the central level, in order to reduce budgets deficits. Increased political space and a larger share in the benefits were to be provided to local governments and citizens, who were expected to take on expanded responsibilities and fill roles previously performed by central governments.

In many ways decentralization has been advocated and promoted in the forestry sector on the premise that if local authorities have discretionary power over forest resources, represent and are accountable to the local population , their decisions will lead to more efficient and equitable outcomes than if authorities make those decisions (*Ribot : 2004*).

As rights holders, citizens have the right and the responsibility to participate while governments, as duty bearers, have an obligation to provide a basis for the fulfilment of civic rights and human rights, more generally, and to be responsive to citizens' concerns. These reciprocal rights and obligations, in turn are expected to foster greater transparency, increased citizens' demand for accountability and increased responsiveness of governments to local needs, resulting in better public service delivery, more efficient and sustainable resource use, and improved governance overall. *The enhanced collaboration among key stakeholders, local government, civil society and the private sector anticipated to develop in due course, is also expected to*

be driving force for development, innovation and further improvements in governance at different levels.

In the forest sector, citizens' and communities' incentives to demand accountability from the state may be low if direct benefits from state-owned forests are perceived to be low and if devolution of forest ownership to communities has not led to increased taxation. Moreover, in current years the goal posts of decentralization have constantly shifted along with changes in development thinking and evolving ideals for the governance of environmental resources (*Capistrano: 2008*). Pre-existing social networks and customary institutions have also proven to be resilient and persistent in their influence. Not surprisingly, in practice, decentralization in Africa as in other regions has fallen far short of expectations. In order to be effective the process of decentralization requires time, persistent effort and consistent monitoring and course correction along the way.

Analyses of cases around the globe indicate that certain forms of decentralization have led to some improvements in livelihoods, resource use and the quality of decision-making under certain conditions. In many African contexts, however, the effectiveness of decentralization and accompanying governance policy reforms has been undermined by a variety of factors of which the most notable include conflicts:

- between customary and formal law,
- inconsistencies within formal law and discrepancies between policy and practice,
- weaknesses in institutional capacity at different levels,
- lack of political commitment to implement decentralization and governance reforms despite enabling laws and policies
- Inadequate provision of needed financial and other resources
- Uncertainty due to the tendency of governments to recentralize control
- Unclear and insecure property rights to forest land and resources
- Rent seeking, corruption and illegalities
- Capture of the major share of benefits by dominant groups at the expense of other stakeholders

How decentralization and governance processes unfold in Africa and how they ultimately impact upon different stakeholder groups in society depend in no small measure on the nature of societal institutions and the historical antecedents that shaped them. The multiple scales and frames, through which governance institutions

operate, including customary forms of representation, authority and property rights, are important defining elements. Inevitably, similar reforms undertaken in different countries and context can have different curves, even while they may share some similar patterns and evolutionary pathways.

4.5.2 Forests and Climate Change

Forests play a central role in climate change. The effects of climate change are having a strong impact upon forest ecosystems and will affect the livelihoods of forest dwelling communities and Africa will be no exception.

Climate change is considered to be one of the major threats to sustainable development as a result of its impacts upon health, infrastructure, settlements, agriculture and food security and ecosystems. Land-use change, primarily tropical deforestation, forest degradation and forest fires, are the second principal source of Green House Gases (GHG) emissions. Additionally, deforestation is one of the most critical environmental problems facing many regions of Africa today in terms of its long-term negative impacts upon biodiversity, loss of economic opportunities and increased social inequality.

Climate change is likely to affect all forest landscapes. With rising temperatures, changes in water availability and the expected increase in carbon dioxide levels, it is anticipated that forests will change at two levels; firstly the physiology and metabolism and secondly the ecosystem functioning. These changes will have significant impacts upon the availability and quality of forest goods and services, including the capacity of forests to remove carbon from the atmosphere.

Poor communities' contribution to increased forest-related GHG emissions is a highly relevant issue. According to a recent report by the UNFCCC, poverty-driven activities, especially forest conversion for subsistence are responsible for up to 45 per cent of deforestation and forest degradation worldwide (*Blaser and Robledo :2007*). The social, economic and ecological impacts of these emissions are not yet completely understood. However, it is obvious that a policy framework and corresponding funds needs to be guaranteed for promoting poverty alleviation programs aimed at solving the direct and underlying causes of deforestation and forest degradation in any post-2012 mitigation agreement.

4.6 Deforestation in Zambia

In Zambia more than two-thirds of its 13 million citizens live on less than US\$1 per day. Although poverty levels have fallen from 73 per cent in 1998 to 68 per cent in 2004, population growth is increasing pressure on natural resources and contributing to their depletion. The country's Fifth National Development Plan 2006-2010 (FNDP) identifies wealth creation through sustained economic growth as the most important element in fighting poverty and places high priority on sectors that have the best potential to stimulate growth and on sectors that best address the needs of poor people such as agriculture, education and health.

The Zambia Forestry Action Plan (ZFAP) was adopted in August 1997 as a 20-year framework for the sector's development. It is based on the principles of sustainable forest management, capacity building, stakeholder participation, private sector involvement, gender balance in forestry development and cross-sectoral approaches. It underscores the extent to which poverty, population growth, economic growth, and environmental degradation are inter-related and it highlights the need to design programs that take these linkages into account. It also recognizes the importance of forests to agriculture, biological diversity, water, mining, transportation, energy and tourism, pointing out that decisions made in these and other sectors often are the cause of forest depletion.

Forest cover change may be defined as an increased and or reduction in forest covers for an area over a given period of time. This change could be in form of deforestation, forest degradation. Deforestation occurs when agents clear forested land and subsequently change its use to another land use- option, that is, cultivated or built –up land. FAO defines deforestation as the change of land cover with depletion of tree crown cover less to 10 per cent. The change within the forest class, for example, from an intact forest to an open forest, which negatively affect the stand or site and, in particular, lower the production capacity, is termed as forest degradation (FAO; 2000). Accordingly, Zambia's Capacity Research Division, bulletin no. 25, classifies and defines a forest as a composition of standing tress whose canopy cover is equal or more than 10 per cent measured over 0.5 hectares or over a distance for relascope's basal area estimation. The relascope basal area is a simple technique used to measure the height and basal area of a tree or a stand of forest. Therefore, any human activity or indeed a natural cause that may reduce the canopy cover or tress to less than 10 per cent amounts to deforestation, while the reduction from 100 per cent canopy cover to 10 per cent may be referred to as forest degradation.

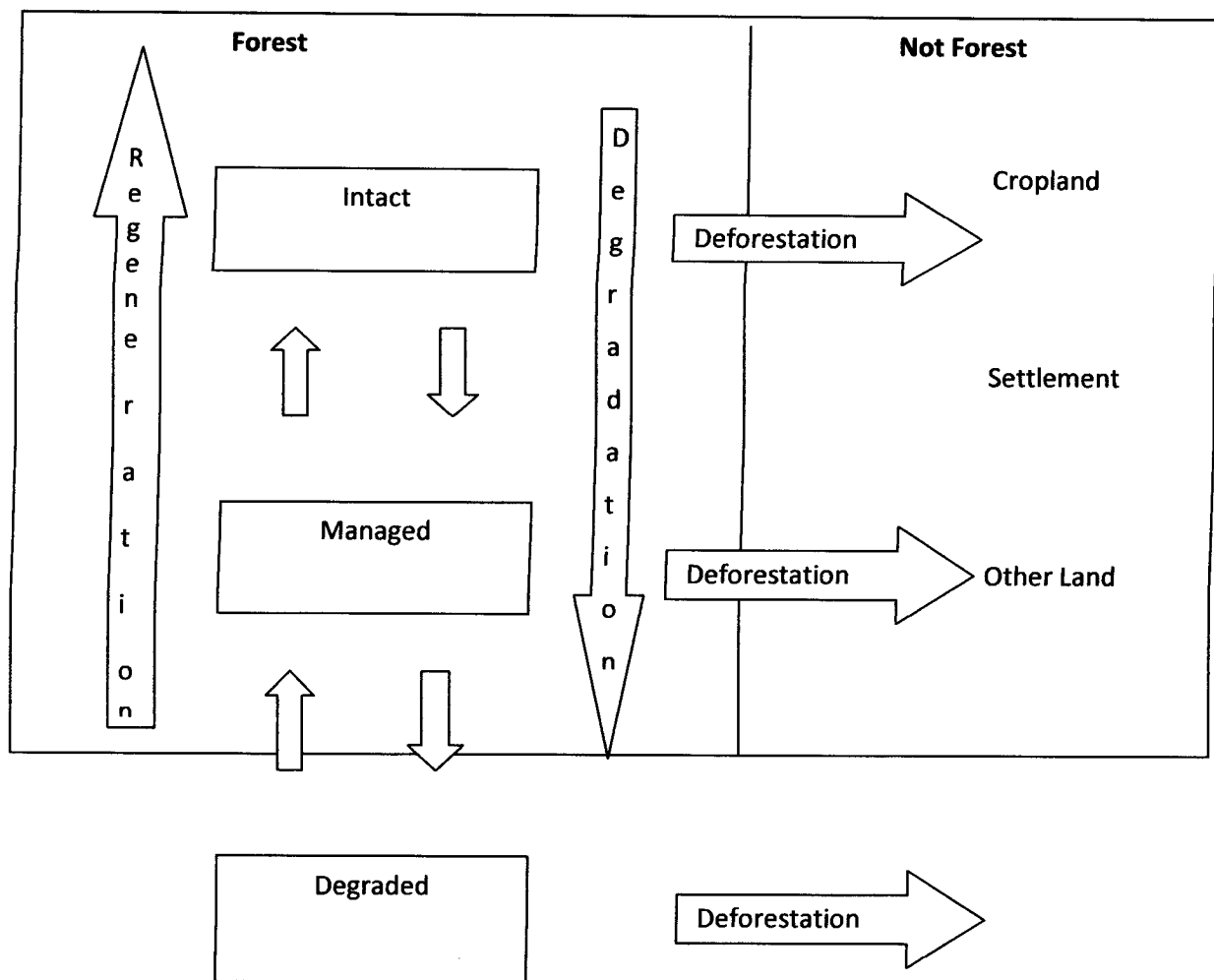


Fig IX: Forest Cover Changes (deforestation and forest degradation)

SOURCE: Forest Report 2000

Therefore based on the Integrated Land Use Assessment, ILUA land cover mapping using satellite imagery data of 1990, 2000 and 2005, the rate of forest change, deforestation, is estimated at 284,000 hectares per annum or 0.62 per cent of the current forest land of the country.

The computation was generated from remote sensed data satellite images over a period of 17 years at 95 per cent confidence sampling limit at a mapping unit of 0.09

hectares. Taking into consideration the population density and resources accessibility it is suffice to state that the country’s land cover loss is in the range of 250,000 and 300,000 per annum, details are in the table below:

Table II – Annual Forest Change in Hectares

Province	Land area	Forest in 1990	Forest in 2000	Forest in 2005	Annual Loss %
Central	9,439,438	6,213,999	5,232,563	4,913,115	1.22
Copperbelt	3,132,839	2,118,888	2,004,202	1,893,522	1.1
Eastern	6,910,582	5,334,941	5,110,742	5,128,460	0.07
Luapula	5,056,908	3,314,598	3,286,495	3,162,225	0.78
Lusaka	2,189,568	1,405,363	1,387,786	986,260	5.79
Northern	14,789,565	7,900,920	7,692,58	8,023,022	0.86
N/Western	12,582,637	9,599,120	9,403,079	8,915,325	1.04
Southern	8,528,283	6,961,224	5,161,349	5,101,232	0.23
Western	12,683,580	8,535,384	8,403,159	8,433,420	0.07
TOTAL	75,261,400	51,384,438	47,681,962	46,556,581	11.20

SOURCE: ILUA land cover mapping (1990, 2000 and 2005 land sat Imagery for Zambia)

This decline in forest cover are caused mainly by a combination of pressure factors ostensibly to accommodate the requirements and physical impacts of agriculture expansion 50 per cent, infrastructure development 15 per cent, urbanization and settlement expansion 25 per cent, and the ever increasing demand for wood-based energy especially charcoal 5 per cent. The rest of the forest cover change is attributed to timber harvesting, intensive wild fires and other natural disasters.

The decline in forested land will continue due to the population increase, poor hydroelectric supply recently characterized by poor plant maintenance, frequent breakdown, and low capacity utilization. Agriculture has been bedevilled by inefficient state input supply, inadequate extension that has created problems of high demand of forest resources (*ILUA; 2008*). Similarly, infrastructure development leads to positive socio – economic impacts that mostly depend on exploitation of natural resources. This is a serious agent causing permanent forest cover change (deforestation). In very normal circumstances an Environmental Impact Assessment (EIA) should be conducted in order to legitimize the clearing of any piece of land.

Biodiversity plays critical roles in the healthy functioning of ecosystems. These roles include nutrient and water cycling, land protection from erosion, climate stabilization through carbon sequestration and the production of crops through pollination. Forests are an important sink for carbon dioxide. In Southern Africa, Zambia has one of the highest pools of carbon in its forests/woodlands but annual forest loss is poorly known. Plants also provide habitats for animals while animals play a crucial role in regeneration of plants through seed dispersal and germination.

Biological resources support livelihoods of the majority of the rural population in Zambia. Forests provide ash fertilizer for shifting cultivation, timber, energy, household tools and construction materials. Wild plants and animals are important sources of food, especially during famine. Medicines and other valuable chemical products are obtained from both plants and animals. The total contribution of biodiversity to national economy in Zambia is not known because the value of most activities based on the use of biodiversity is not reflected in national accounts. Nevertheless, the contribution of agriculture, forestry and fishing to GDP was 17.2 percent in 1996 and 16 percent in 1997. A sector-based analysis shows that biodiversity utilization plays a significant role in the national economy.

4.6.1 Forestry institutional framework of Zambia

Approximately 45 percent of the Zambian population lives in urban areas, mostly in three of the nine provinces. Because of this skewed population distribution, over-exploitation of forests has been concentrated in the immediate hinterlands of these urban areas, where excessive cutting for wood fuel already led to increased degradation of woodlands. Due to the continuous over-exploitation, the harvesting cycle is shortened and late fires become more frequent. This leads to changes in

species composition and threatens the regeneration of the forest and the threshold to convert depleted forest reserves to agricultural land declines.

In addition to demand for fuel wood, the pressure to convert forests in open areas into agricultural land is high. In open areas land for cultivation is allocated by traditional chiefs. In areas where enough land is not available in open areas, forest reserves are used because these are often considered as abandoned areas or communal land and therefore are more easily exploited.

Most wild fires that damage forest areas are caused by man. Timing and frequency of fires determine the effect of fire on the ecosystem. In the natural state, annual early fires burn the ground layer of the forest in the cool season (from May to mid-August) when trees are dormant. Severe fires, caused by late burning, are destructive to forests. The current forest use has affected fire frequency and timing. In the natural state most forests and woodland vegetation types have a closed canopy. Over-exploitation changes the light conditions of the forest and accelerates grass growth, which provides fuel for late fires. Frequent late fires prevent regeneration of fire-intolerant species and thus change species composition. The result is an open type vegetation and ultimately grassland.

These threats to ecosystems have affected the status of forest reserves in the country. About 20 percent of forest reserves are either encroached or depleted due to over-exploitation of wood products, settlement and cultivation (*MTENR, 1998a*). In fact there is a significant logistic correlation between the proportion of depleted/encroached forest reserves and provincial population density. These threats to forest reserves have affected miombo woodland and grassland ecosystems more than the other ecosystems.

The mostly affected plant groups from habitat destruction include mosses and orchids and ferns whose habitats are being destroyed by drought, cultivation and fire. In some parts of the country, conversion of peat bogs to cultivation has permanently destroyed orchid habitats, and along with them, the orchids. Fauna and flora are usually dependent on humus for establishment and maintenance. Conversion of dry land ecosystems to cultivation and livestock grazing destroys the humus layer on the soil which triggers the disappearance of various organisms in the ecosystem. Similarly, indigenous plants are destroyed due to deforestation and selective cutting of trees.

Botanical reserves are suffering the same fate as forest reserves. These reserves are managed by the Division of Forestry Research and District Forest Extension Officers.

Out of a total of 59 Botanical reserves, 37.3 percent are either encroached upon or depleted, although no harvesting is allowed in botanical reserves. In some cases, the botanical reserve boundaries are not marked while in other cases, the district staff who are supposed to manage them, are not aware of their existence and/or location in their districts.

Human encroachment is highly associated with cultivation, livestock grazing and deforestation. Settlements in Forest Reserves are expanding due to population growth and immigration and more land is being converted to agriculture. Already ecosystems in 25 percent and 48 percent of national parks and Forest Reserves, respectively, are degraded due to human encroachment.

Scientists predict that global climate change due to build-up of Green House Gases (GHG) in the atmosphere is likely to have effects in tropical countries including Zambia (IPCC, 1995). For example, global warming and reduction in rainfall is likely to contract aquatic and dry evergreen forest ecosystems.

The Lukanga swamp in central Zambia almost dried up due to the frequent droughts of the 1990s. Shallow rooting trees, such as *Parinari curatellifolia* which support flora, for instance, orchids, are drought intolerant and die, along with their epiphytic associates, during severe droughts. Recurring droughts, especially in the southern part of the country, have resulted in crop failure and starvation of livestock which make the preservation of seed and animal breeds difficult.

The single most critical issue facing the forest sector in Zambia is the government's failure to establish the Forestry Commission which is called for in the Forests Act of 1999. As a result, the institutional framework is based on 1973 legislation and it has no legal authority to implement either the National Forest Policy or the Zambia Forestry Action Plan. Outdated laws and regulations also prevent the expansion of Joint Forest Management, which is a prime means of alleviating poverty in forest-dependent communities. Moreover, an incapacitated forestry administration is unable to halt the high rate of deforestation which continues to destroy the resources on which poor people rely.

The reluctance of donors to support the sector as long as it is in the current state of disarray is of concern as well. Cabinet urgently needs to make a decision on the way forward. If, for example, it agreed to transfer the employees of the Forestry Department to the new Forestry Commission and to establish a team to manage the

transition, the sector would have a legal foundation to address today's imperatives, including broadening community participation in forest management.

Civil society could play an instrumental role in bringing about required change by pressuring Parliamentarians and their committees for action.

4.6.2 Coordination and collaboration in Forestry Management

Overlapping and sometimes conflicting mandates make collaboration across sectors a challenge in Zambia. For example, more than thirty institutions are involved in the management of natural resources. The Government established the Natural Resources Consultative Forum to address this problem but some members believe that wildlife issues dominate the agenda.

Therefore, the feasibility of setting up a mechanism to deal exclusively with forestry matters is being examined. Before a decision is made, it would be important to assess whether another committee would further isolate the sector. Resource implications, funding sources and the extent to which this forum would need to draw on the same stakeholders as those involved in natural resources are other factors to be considered.

Some ministries expressed a willingness to collaborate more closely with the Forestry Department and every effort should be made to pursue joint initiatives – working with the Department of Energy to reorganize the charcoal industry and improve the efficiency of charcoal production; conducting surveys with the Central Statistical Office to collect data on forestry activities, including in the informal sector; and incorporating forestry in campaigns that the National Tourist Board is developing to market Zambia as a tourist destination, among other opportunities.

4.6.3 Monitoring and evaluation in Forestry Management

The Government developed a system to monitor performance and evaluate progress in implementing the Fifth National Development Plan and ministries, in consultation with stakeholders, were required to submit a limited number of indicators to the Ministry of Finance and National Planning (MFNP). Despite a chapter dedicated to natural resources, of which forestry forms part, there is not a single indicator to measure its contributions to poverty reduction. MFNP stated that it would accept proposals from the Forestry Department even though the deadline had passed.

The Central Statistical Office also expressed the possibility of including forestry dimensions in the household survey now under development. Thus, the Forestry

Department must act quickly to develop indicators and survey questions to measure as well as demonstrate the sector's importance to the national economy and livelihoods, especially of poor people. If it fails to act now, it will lose the opportunity to build its case at least for another five years until the next FNDP is prepared.

With regard to monitoring and evaluating implementation of the Zambia Forestry Action Plan, the Forestry Department has no established system to inform decision-making nor does it have sufficient capacity to collect baseline information, set targets, develop monitoring tools or manage databases.

Putting a framework in place would allow stakeholders to measure the impact of interventions against stated objectives, including poverty reduction, and identify impediments. In addition to detailing the data to be collected (quantitative and qualitative), the methods of collection and analysis, and the institutions involved, the framework should capture activities at the household level – for example, walking distance to collect fuel wood.

4.6.4 Awareness and communication in Forestry Management

Consultations with key stakeholders took place during the formulation of the Zambia Forestry Action Plan and the National Forest Policy. The Forestry Department has since provided the documents to those who are collaborating in their implementation. Notwithstanding this distribution, forestry information and materials are not available on the ways in which forests and trees outside forest reserves contribute to local and national economies, benefit the environment, improve livelihoods, and enhance food security. As a result, decision-makers and the general public neither recognize nor appreciate the importance of the sector either in these areas or with regard to poverty reduction.

Campaigns to market forestry in terms of its economic, environmental, social and cultural benefits include the use of written material – brochures, fact sheets and policy briefs, for example. Radio, the press, workshops and televised documentaries have also proven to be effective in showing how forests and trees outside forests can help achieve the aims of many different stakeholders, ranging from politicians to farmers to local communities.

Following the recent elections in Zambia, it would be opportune for the Forestry Department to brief both newly and re-elected members of Parliament on the role and contributions of the sector in reducing poverty. The same material could be used to raise awareness among representatives of civil society.

4.6.5 HIV and AIDS pandemic in Forestry Management

With about one million citizens living with HIV, Zambia is one of the worst affected countries in Sub-Saharan Africa. The disease is seriously hindering national development and is threatening the achievement of the Millennium Development Goals, including reducing poverty and hunger. The Ministry of Tourism, Environment and Natural Resources has established a committee to address HIV and AIDS issues although no mention is made of its impact on forestry nor does the sector have awareness or prevention measures in place. Given the expressed willingness of the National Aids Council to work directly with the Forestry Department, the time is opportune for officials to implement awareness and prevention programs in the workplace.

Once considered a problem exclusive to the health sector, the government has mainstreamed efforts across the public service to mitigate the effects of HIV and AIDS and fight its spread. If the Forestry Department determined how health authorities were able to convince decision makers to adopt such a broad strategy, it might use similar approaches to persuade them to view forestry from a wider perspective as well as, for example, in terms of how it assists other sectors such as the environment, agriculture, and energy to achieve the goals contained in the Millennium Declaration. Highlighting the ways in which forests and trees outside forests act as safety nets for HIV and AIDS victims and their families would also increase appreciation of the sector's importance in reducing poverty, improving food security and building a stronger economy.

4.6.6 Forestry's contribution to Gross Domestic Product

In 2004, estimates gauged forestry's contribution to gross domestic product (GDP) at 3.7 per cent but, because Zambia has not conducted a national forest inventory since 1964, information on the extent of the resource and on its importance to national and local economic development is out of date.

As a means to raise the profile of forestry in the Fifth National Development Plan, the Forestry Department commissioned a study to measure the sector's direct financial contributions to GDP and the degree to which it reduces poverty. Not surprisingly, the report concluded that estimates are indeed low and that the potential of forest industries to improve livelihoods is linked to their capacity to provide employment which, in turn, depends on reforming the forest administration and creating a climate which fosters private investment.

The tourism industry has set up a satellite account to capture information on its economic contributions to GDP. It includes data on employment and on how much Zambians and visitors from abroad spend on tourism. The Ministry of Tourism, Environment and Natural Resources should consider establishing a similar account for forestry to build a case for more support to the Forestry Department to perform its functions.

4.6.7 Integrated Land Use

Forest cover in Zambia continues to decline both in quality and quantity due to a number of factors such as the extensive slash and burn practices of shifting cultivation, high demand for wood-based energy, unsustainable use of the few known commercial indigenous tree species, over-grazing and forest fires.

Moreover, up-to-date information on the growing stock and use of natural resources is not available to assist in their sound management. Neither does the country have the means in place to plan and carry out integrated land use management , a situation which, given the high correlation between poverty and resource depletion, makes the need for one a matter of priority.

4.6.8 Civil society

The voice of civil society is weak in Zambia although much potential exists for it to drive sector reforms and support sustainable forest management if given sufficient resources, both human and financial. Increased capacity would allow non-governmental organizations to engage decision-makers in dialogue and hold them accountable for their actions.

They could strengthen their presence and influence in forestry discussions if they took advantage of the opportunities provided by the National Forest Program Facility to participate more fully in local and national decision-making processes. They could also better capture the interest of cooperation partners if they package their requests for support in terms of activities which address governance and human rights issues as well as those which are geared to establishing baseline data for future monitoring.

The recent approval of small grants under the Global Environment Facility represents another opportunity to increase their involvement.

4.6.9 Joint Forest Management

Due to the fact that the forest estate in Zambia is too large for any one body to police or manage, joint forest management (JFM) is seen by many as the best option to tackle deforestation and environmental degradation.

JFM is also considered an effective mechanism to reduce poverty, advance human rights, democracy and good governance; and promote gender equality.

Although the National Forestry Policy provides a supportive framework, the concept has no legal basis from which to operate, thereby preventing its application to other sites. Moreover, communities involved in the pilot phase cannot implement the plans they developed jointly with government because there are no provisions to share revenues.

Once legislation is in place, future expansion of JFM in Zambia should build upon lessons learned in the pilot phases, including the need to develop monitoring tools to measure the impact of this approach on poverty reduction. It would also be important to work closely with traditional leaders and build on existing community structures such as resource boards and village committees. The sharing of benefits should also apply to other forest resources besides timber such as wildlife, non-wood forest products and charcoal production.

4.7 Deforestation in Kalulu Forest Reserve Number 32

As earlier alluded to, Kalulu Forest Reserve is a protected forest and was established in order to act as a carbon sink to protect the water catchment area, which provides household water to the residence of Kabwe town, from evaporation. The water catchment area and its underground basins of water also have the characteristic of a renewable natural resource.

Under normal circumstances an aquifer, such as the ground waters of Kalulu, undergoes a self-cleansing process of pollutants that are disposed into it. However, the effectiveness of the process depends on the nature of the pollutants and the rate at which they are discharged (*An Inquiry Into Well-Being and Destitution 1992: 276-277*). Furthermore, many aquifers are recharged over the annual cycle. The recharge rate depends not only on the annual precipitation and the extent of underground water flows, but also on the rate of evaporation. This in turn is a function of the extent of soil

cover which in turn has to do with the extent of forest cover. In areas of deforestation, reduced soil cover lowers both soil moisture and the rate of recharge of underground basins, which in turn reduces the soil cover still more, which in turn implies a reduced rate of recharge, and so on. With a lowered underground water table, the amount of water extraction increases significantly (*Hamilton and King: 1987*).

Forests apart from being a source of a variety of products such as timber, food, saps and bark, influence local and regional climates as well as preserve soil cover and, in the case of watersheds, protect soil downstream from floods. Increased runoff of rainwater owing to deforestation helps strip soil away, depriving agriculture of nutrients and clogging water reservoirs and irrigation systems. The social value of forests such as Kalulu, typically exceeds the value of its direct products.

Since Kalulu Forests' encroachment in 1996, the forest which has been cleared extensively for fuel wood and farming is now more of farming block than a forest reserve. And although there have been calls to de-gazette the area, this has not been possible as experts from the MTENR state that there is no sure way of establishing the flow of the underground water.

In spite of a lack of a forest resource inventory in Kalulu and having current figures on forest cover and remaining stock being based on estimate assumptions, it is clear that the rate of deforestation in Kalulu has reached a worrisome state.



Fig X: PART OF WHAT IS LEFT OF KALULU FOREST

Participatory methods have gained popularity in recent years as researchers, field practitioners and development professionals have sought more effective ways to involve local people in decision making and research. The Centre for International Forestry Research (CIFOR) has developed various participatory tools specifically for use with forest communities and other natural resource dependent groups. Some of these tools are adaptations of existing methods; others were created specifically for work with forest dependent communities. The tools have diverse applications: stakeholder identification, decision making, planning, conflict management, information collection and other uses.

CIFOR has applied and tested these methods in communities in many countries, including Indonesia, Vietnam, Nepal, Zimbabwe, Cameroon, Malawi, Brazil, and Bolivia among others. This collective experience has strengthened and enriched the tools, making them flexible and robust.

The communities that live in tropical forest areas and rely on forest resources for food, housing, and work are often isolated, with small populations and little formal education. Many of these communities have recently emerged from paternalistic power structures such as patronage systems, dictatorships, or feudal economies.

These legacies have left them with little power or experience when negotiating for the future of their communities and their forests. Government officials, private economic interests and other stakeholders often struggle to understand and value the perspectives of local people. As a result, community voices are less likely to be heard and their concerns are often left unanswered in the decision making and policy development that affect their forests and well-being. This is consistently an obstacle when trying to improve local livelihoods or manage natural resources sustainably (*Guide to Participatory Tools for Forest Communities 2006: 5*).

4.8.1 The Importance and Urgency of Community Participation in Forest Management

Communities often have little say in what happens to them and their forests. However, community participation in decision making is important for several reasons. First, political and social forces such as land reform, decentralization policies, the advance of the agricultural frontier and the global market are transforming forest landscapes in the tropics. Forest dependent communities are extremely vulnerable to these changes. If their forests are threatened, communities might struggle, transform, or disappear completely.

In many situations, without strengthening communities, the forests will be equally changed or endangered. Another important argument for community participation is that local knowledge and perspectives are fundamental components of any research or assistance project with communities.

Local people must be involved in decision making about their natural resources to guarantee sustainable use, encourage local buy-in, minimize conflict and distribute efficiently the benefits of the forest (*Ostrom et al.1999*). In fact, community participation does not have to come at the expense of other stakeholders; rather, it can create a win-win outcome where everyone benefits (*Colfer and Byron 2001*).

There are also two important policy trends that make the participation of communities in decision making more urgent. The first is forest devolution, which is a process that puts control of tropical forests into the hands of local communities. This trend is part of a larger reform that has been prompted by diverse forces: grassroots land re-allocation and community empowerment movements, democratic decision making reforms encouraged by outside influencers such as donor nations, recognition of the economic consequences of unsustainable forest management by central government or private enterprise management, and growing confidence in the capacity of communities to maintain the biodiversity of forests (*Anticipating Change: Scenarios as a Tool for Adaptive Forest Management 2000: 21*).

Government decentralization is the second important trend that has made the need for participatory approaches more urgent in some developing countries. Decentralization reforms that affect the forestry sector have been adopted by approximately 60 countries in the tropics.

Decentralization involves reversing centralized government planning so that planning starts at the local level, instead of being imposed from central authorities. The reform hinges on the belief that citizens can be trusted to shape their own future (*Jennings: 2000*). This is a responsibility as well as a right, requiring that communities take a more active role in local government project planning and budgeting processes. Although participatory methods do not guarantee empowerment, they have the potential to generate downward accountability of the governance process and strengthen civil society (*Chambers and Mayoux 2003*).

4.8.2 Benefits of Participation and Participatory Communication

To reinforce the benefits of adopting participatory communication, it is important to understand that participation and participatory communication are main answers to

why so many development initiatives in the 1970s and 1980s did not achieve their objectives to produce significant improvements for the many poor of the planet. The causes of many such failures were ascribed to the limited understanding of local context and the insufficient involvement of local stakeholders. In addition, misunderstandings and differences in perceptions about key problems often led to limited political buy-in and faulty project design (*Participation and Conflict: Lessons from Community Forestry, 2005:175-178*).

By actively engaging stakeholders from the start and by seeking a broader consensus around development initiatives, participatory communication has begun to be considered a crucial tool to avoid past mistakes. Many conflicts and obstacles can be prevented if addressed in a timely fashion. Moreover, genuine participation increases the sense of project ownership by local stakeholders, thus enhancing sustainability. On one hand, communication practitioners might have a more complex process to take into account the many viewpoints to be reconciled, but on the other, they are likely to gain some extra benefits. For example, communicating project objectives and outputs might become redundant because stakeholders will already be aware, many of them will already consider the initiatives their own, will become actively engaged in the project.

Participatory communication's value, however, is not only considered because of the better results it can yield. People's participation is also considered a right of its own by an increasing number of NGOs, international organizations and UN agencies. In this respect participatory communication fulfils a broader social function, providing a voice to the poorest and the most marginalized of the people around the world. By engaging all relevant stakeholders, participatory communication becomes a tool that helps alleviate poverty, mitigates social exclusion, and ensures priorities and objectives are agreed to and refined by a wider base of the constituencies. This process enhances the overall results and sustainability of any development initiative.

Different from one-way communication intervention, participatory communication requires a predominantly dialogic process, whose outcomes and implications are not always easy to pre-determine. This makes some managers of development initiatives uneasy. On the other hand, the higher the level of control from the top, the weaker the sense of ownership and commitment by the local stakeholders. Stakeholders' ownership and commitment are necessary ingredients to ensure better and more sustainable results.

For example, in a water project, officers of an international organization identified as a key development priority the need to improve the water system of a poor region in a Central American country. Based on their knowledge and expertise, the officials defined what was needed and which aspects should be improved, with little or no input from local stakeholders. Expectations of the stakeholders were not considered, and as problems emerged, project management came under increased pressure from the donor and national political authorities to gain the support of what are too often referred to as “beneficiaries.” Thus, a more participatory stand was adopted in the following stages, and local stakeholders were involved in decisions concerning the technical design of the new water system.

The end results of this mixed approach, that is, top-down in the beginning and participatory from halfway mark, were less than satisfactory. Managers and a subsequent review mission ascribed much of the failure to participation, when in fact should have been ascribed to a faulty use of participatory communication. To be effective and actually participatory, the project should have sought participants’ inputs at the beginning when assessing the situation and making decisions on what to do were made. Subsequent actions in the process could have been restricted to technical experts. This water project not only misused the concept of participation but also jeopardized the overall success of the project itself (*Participatory Communication - A Practical Guide*, 2009: 21).

When stakeholders are not included from the start, participation is significantly impaired. In this example, local stakeholders should have been included in defining the needed outcome of the improved water system. They would have gained interest and been knowledgeable about which services were needed to improve lives. Rather they found themselves in a discussion of the technical design of a water system in which they had limited knowledge or interest. By switching these two basic factors—no stakeholder input in setting priorities and stakeholder inclusion in technical decisions—the project management set itself up for failure.

The Johari Window is a tool originally developed by Joseph Luft and Harry Inghman to explain interpersonal communication processes. It has been adapted to illustrate the dialogical process that exchanges knowledge and explores issues, leading to the best possible change. The Johari window is a useful tool to illustrate the process of joint decision making necessary in any participatory communication initiative. If “the unknown” is addressed successfully, the successful outcome is the definition of the objectives for the intended change.

4.8.3 Participatory Forest Management

Participatory Forest Management (PFM) was widely introduced in 2002. It is an attempt to deal with the environmental challenges by promoting community-based schemes for sustainable forest management. The idea behind this approach is a threefold development aim:

- to maintain or enhance forest quality and condition
- to enhance local livelihoods through increased forest revenues and supply of subsistence forest products
- to establish or strengthen effective and representative village institutions in the field of natural resource management (*Blomley and Ramadhani, 2007*).

Meghji (2003) additionally mentions that PFM is seen as a comprehensive rural development strategy that should contribute to sustainable development through combining conservation activities with economic incentives.

Two main approaches for PFM implementation are being promoted (*Blomley and Ramadhani, 2007*).

(1) Joint Forest Management (JFM) is a collaborative management approach, in which the government remains the owner of the land such as National Forest Reserves, and villagers enter into management agreements and share duty and benefits under national jurisdiction. JFM is focused on high value montane forests which are forests that are found on highlands with tree species that can adapt to both high and low temperatures, within the Government-owned forest network. JFM's ecological impact is highly valued, while the benefits for collaborating communities seem very limited.

(2) In Community-Based Forest Management (CBFM) local communities take full ownership and management responsibility for an area of forest within their own jurisdiction: the village forest reserve. Villagers gain the right to harvest timber and forest products, collect and retain forest royalties, undertake patrols (including arresting and fining offenders) and are exempted from local government taxes on forest products, and are not obliged to remit any part of their royalties to either central or local government. The underlying policy goal for CBFM is to progressively bring large areas of unprotected woodlands and forests under village management and protection.

PFM is based on a broad mix of ideas related to sustainable development in rural areas. The missing programmatic clarity and lack of priorities directly links with the

implementation problems. However, the focal problem of the program management seems to be, that even if the program is called Participatory Forest Management, there is a lack of appropriate and clear governance structures and processes, that is to say, the participation of the target group in the planning and implementation of the program.

The key objective for strategic communication is the facilitation of the PFM implementation process through community empowerment and the according development of appropriate participatory management structures and processes.

In particular, contributions of strategic communication interventions with immediate effect can be:

- Raising awareness on the importance, challenges and opportunities linked with sustainable forest use among the various stakeholders to provide for informed decision-making.
- Popularizing the program in areas and among groups that are not yet covered or informed.
- sharing information on program, respectively rights, responsibilities and benefits as well as participatory planning approaches in order to enhance knowledge, awareness and interest amongst the various stakeholders
- facilitating stakeholder dialogues and collaboration amongst stakeholders in order to build on sustainable governance structures and processes

Furthermore, by using strategic communication interventions as a process management tool, valuable experiences can be gained and used for adaptation within the program cycle, and can also be used as a background for future decentralization processes.

In order to reach out effectively, PFM communication interventions have to work around to following implementation challenges:

- high levels of illiteracy in local communities,
- limited media and information channel access in rural areas,
- limited interests from district and local influential's,
- lack of financial and human resource capacity for comprehensive

Individual change as well as transformative capacity, especially at community level, is needed, which only a participatory communication approach can provide for. Structural changes are mainly efficient if they aim at long-lasting solutions. Efforts

should be directed at enhancing the communicative and process management capacities at community level as well as among other relevant stakeholders, especially the local and district authorities as well as all authorities dealing with forest issues.

Communication is rather about building the community than transmitting information (Waisbord 2005:87). According to participatory approaches, change does not happen when communities are not actively engaged and lack a sense of ownership (Waisbord 2001:10). The local communities should not only be involved but have to carry in the communication process right from the beginning. Each society has to be able to define independently the concrete form in which it wants to organize its social communication process (Servaes & Malikhao 2006:98). Strategic communication interventions have to support or even enable such processes. However, participation does not imply that everybody has to be involved in these activities, but that participation is being made possible in the decision-making regarding the subject treated in the messages and regarding the selection procedures (Servaes & Malikhao 2006:95)

Development and implementation of communication instruments have to consider local media habits as well as the technical capacities. High estimation for cultural values not only is a basic requirement but a value in its own. For example, given the fact that there is a high degree of illiteracy in rural Tanzania, and often illiteracy entails low levels of abstract/intellectual thinking, face-to-face communication tools, such as theatre and discussion clubs present a good choice for sharing and discussing complex information, and prepare the ground for participatory decision-making processes. However, one cannot neglect the fact that personal communication is quite costly.

With limited funds, one either has to engage in additional fundraising, if experts are needed, embark on a multiple model or find a way to switch to other communication channels (*Participatory Forest Management in Tanzania 2008 : 7*).

The top-down communication can be used for the provision of facts, the bottom-up communication can lead to program adaptation, while the peer-group-exchange can foster social learning. Mass media can be used to supplement the communication approach; they bring in information from outside the community and can especially contribute to raising awareness and knowledge. Although mass media are important for the dissemination of messages, social networks are responsible for the discussion, adaptation and implementation of new ideas.

According to FAO (2002) communication has a key role to play in the solution of a development problem, if the problem has risen from lack of knowledge, or from

attitudes, negative beliefs, or a lack of know-how. Beyond this narrow and technical definition, participatory communication postulates that communication is at the heart of every development and social change.

Communication can effectively support and enhance PFM's implementation in the field beyond being a pure communication exercise. It can contribute to community empowerment, it can foster good governance through the establishment of transparent structures and processes, and can increase long-term sustainability through adaptation.

4.9 Participatory Communication in Forest Management- Zambia

Although the practice of participatory communication is a new idea to Zambia, it has seen a few successes especially in the realm of health communications where messages are designed for specific target groups such as the youth and tailored in such a way that they not only marry with the times, but involve the full participation of the recipients from the start. This can be seen in campaigns such as the "One Love-Kwasila" and the "Safe-Love" campaign. Before, these campaigns existed, people, especially the youth, were encouraged to abstain. When it was noticed that the youths were not abstaining, the message changed to "ABC" which stood for Abstain or Be faithful to one sexual partner or Use a Condom. Currently there is the "Think, Talk, Act" campaign which encourages people to take in these three vital steps in the fight against HIV and AIDS.

Unfortunately, this has not been the case in the forest sector. Messages created are designed in a one way path with an effort to bring about change. This has resulted in disastrous and often frustrated efforts on the part of the MTENR and the FD as a whole. For example, the message of anti-deforestation practices, as an innovation to bring about change and protect the environment from degradation, has been heard and understood by the masses. Unfortunately for many of these, there is no alternative solution or replacement for that which has come to be their basic source of energy and form of livelihood.

In Zambia today, fuel-wood and charcoal has remained a major primary source of energy in most households. Figures available indicate that 95 per cent of rural people depend on fuel wood and 90 per cent of urban households depend on charcoal. The demand for fuel-wood will continue to increase as the population continues to expand (LUMAZ-Sustainable Forests and Quality Timber 2010: 5). And so to simply tailor

messages that inform people on the dangers of deforestation is close to melting butter in a hot frying pan.

Although the FD has programs such as tree planting, they are not people-driven and constant. Top officials from the government, some pupils in urban based schools and a few NGO's take part in this exercise. Unfortunately most urban and rural based communities do not take part in this exercise which is done once a year in November through to December.

Another problem with the FD is that current legislation and policies hinder it from fully embracing participatory activities. Programs such as JFM have failed to fully take off and incur benefits. People living within de-gazetted forests in Zambia are still not involved in any active program that enables them to actively participate and contribute to the sustainability of their environment. Local knowledge is also often highly ignored.

Although the FD has programs and messages which advocate for anti deforestation practices, these messages are mainly delivered with the use of traditional media such as radio, television and newspaper, as well as new media using the internet, computers and mobile phones. These forms of media, both traditional and new, are not easily accessed by the majority in Zambia as many areas still do not have access to electricity, broadcasting services, have poor road infrastructure and so newspapers cannot be delivered, lack proper telephone and mobile network coverage and have no local content providers. This scenario makes it very difficult for people to access information and tends to only empower and further enrich with knowledge the already well informed urbanized areas. This leaves out the rural people who are the ones most in need of this information and who are capable of coming up with plausible solutions of protecting the environment thus making the message of deforestation a paradox of innovation.

Programs such as the radio's Chongololo Club, environmental education and other educational environmental services that are mainly provided for in urban based schools and people along the line of rail, do not fully tackle the problem nor do they offer any immediate solutions. It is important to note that most rural based people, including the squatters of Kalulu Forest, know about deforestation and have had an opportunity to directly or indirectly access anti-deforestation messages. The problem however is that as a Diffusion of an Innovation, these messages do not offer a readily available, cheap and easy to use alternative. Moreover, these messages do not take into account local peoples perspectives, norms, beliefs, values and knowledge in order

to find the best way in which they can, not only be delivered, but also bring about positive and effective social change.

Ideally communication should lie at the heart of all culture and so culture should lie at the heart of all information communication technology (ICT). Unfortunately for a country like Zambia, most ICTs, such as mobile phones are made outside the country and thus many rural and some urban users do not have the capability to use them to their full potential. Thus they tend to concentrate solely on a few functions making projects such as the sending of the importance of afforestation, climate change effects and the diverse dangers of deforestation by text messaging, a farfetched dream. For example, FAO and Nokia in 2008 came up with a project of how to inform people in rural areas about new farming methods, agriculture information, government policies via local dialects in Kenya using Kiswahili, Malawi using Chichewa and Zambia using Ichibemba. This project never took off due to the fact that during the pilot testing, it was discovered that 83.7 per cent of the total sample size in all the three countries could not access the text messaging facility and let alone read their own dialects (*FAO-NOKIA Report 2009 :32*). Nokia had to get back to the drawing board to try and create phones that have 'voice-prompt' ways of delivering messages without too many instructions attached to them.

CHAPTER FIVE

MAJOR FINDINGS AND INTERPRETATIONS

5.0 Introduction

This chapter gives an analysis, interpretation and discussion of the findings of this study. The aim of the study was to appraise the communication strategies used by the FD in curbing deforestation in forest reserves. The study focused on Kalulu forest in Kabwe, Central Province.

As stated earlier the study was conducted using quantitative methods of research. This was done in order to get first hand information from both the people at the FD who are directly involved in the development, production and dissemination of deforestation information awareness in Kalulu as well as the squatters who need to be educated, enlightened and involved in bringing about sustainable environmental development.

Data analysis was done using SPSS and the WB five stages of sustainable development (WBFSSD) were used for further analysis of data. Descriptive proportions were generated to provide an overview of the characteristics of interest. This formed a basis for interpretation of variables. The resulting data is presented in detail in various tables, graphs and pie charts.

Data was collected from administering questionnaires, in-depth interviews, desk research, FGDs, direct observation and by attending club meeting. This data forms a core of this study because it highlights all the methods and processes of deforestation information dissemination in Kalulu Forest Reserve.

Other stakeholders who have an interest in Kalulu Forest were also spoken to using the instrument of in-depth interviews and in some cases the researcher opted to use direct observation as well.

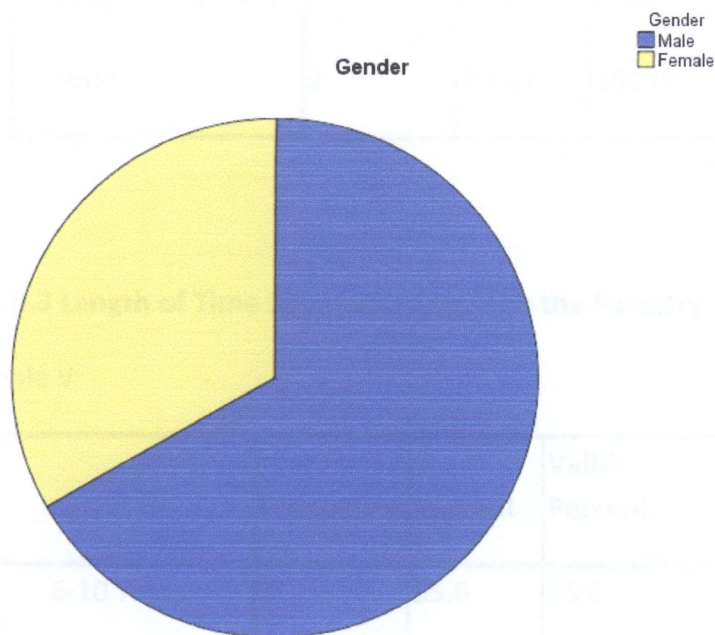
5.0.1 Findings on the FD

Gender

Out of the nine (9) technocrats interviewed at the FD six (6) were male representing 66.7 per cent and three (3) were female representing 33.3 per cent. The statistical table on the next page shows the gender of the staff members.

Table III

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	6	66.7	66.7	66.7
Female	3	33.3	33.3	100.0
Total	9	100.0	100.0	



5.0.2 Highest Academic Qualification Attained

Out of the nine (9) staff members, three(3) held grade twelve full certificates representing 33.3 per cent, one (1) has a college certificate representing 11.1 per cent, two (2) have college diplomas representing 22.2 per cent. One (1) has a university degree representing 11.1 per cent and two (2) have masters' degree representing 22.2 per cent. Table IV on the next page shows this information.

	Frequency	Percent	Valid Percent	Cumulative Percent
Grade 12 Certificate	3	33.3	33.3	33.3
College Certificate	1	11.1	11.1	44.4
College Diploma	2	22.2	22.2	66.7
University Degree	1	11.1	11.1	77.8
Masters Degree	2	22.2	22.2	100.0
Total	9	100.0	100.0	100.0

5.0.3 Length of Time Spent Working with the Forestry Department

Table V

	Frequency	Percent	Valid Percent	Cumulative Percent
6-10 Years	5	55.6	55.6	55.6
Above 10 Years	4	44.4	44.4	100.0
Total	9	100.0	100.0	

The table above shows total of nine staff members representing 100 per cent. Five (5) staff members representing 55.6 per cent have worked in the forestry department about 6-10 years. Four (4) representing 44.4 per cent have worked for over 10 years. The researcher found that during their years of work, the FD staff had attended both

working and academic workshops and disciplines that focus on various disciplines such as strategic planning, wood work, different forest and wood types, bee keeping, climate change as well as projects that dealt with policy formulation.

The research further revealed that none of the workers at the FD had been there for less than six (6) years apart from support staff such as the cleaners who are not revealed in the data above as the research mainly focused on the technocrats and their input in curbing deforestation in Kalulu Forest.

5.0.4 Specific Qualification in Forestry Management

The table shows that there are a total of nine (9) staff members representing a 100 per cent. Six (6) representing 66.7 per cent have a specific forestry qualification while three (3) representing 33.3 they did not have a specific forestry management qualification.

Table VI

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	6	66.7	66.7	66.7
No	3	33.3	33.3	100.0
Total	9	100.0	100.0	

5.0.5 Specific Qualification in Participatory Communication Strategies

Table VII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	2	22.2	22.2	22.2
No	7	77.8	77.8	100.0
Total	9	100.0	100.0	

The table above shows a total of nine (9) employees representing a 100 per cent. Two (2) employees representing 22.2 per cent have a specific qualification in participatory communication strategies while seven (7) employees representing 77.8 per cent have no specific qualification in this area.

The researcher carried out an investigation to establish as to whether the FD staff has specific qualifications in forestry and participatory communication. The researcher further tried to establish if these qualifications assisted them in trying to educate and explicitly explain to the squatters the importance of various environmental issues. Only two (2) of the FD staff had qualifications in Participatory Communication and they stated that they rarely go into the field to educate the people as they are not in the Department of Extension. They further stated that they do not have a policy or any plans that give them the mandate to practice this discipline.

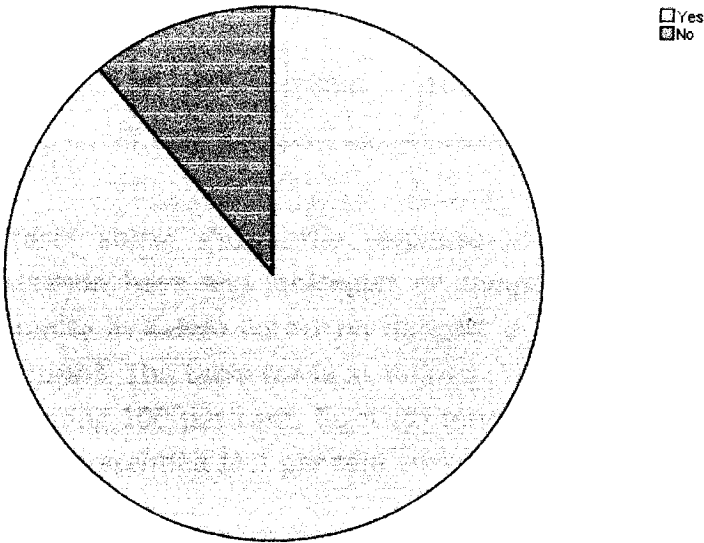
5.1 Does the FD Communicate with the Squatters in Kalulu on the role of a Forest Reserve?

Table VIII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	8	88.9	88.9	88.9
No	1	11.1	11.1	100.0
Total	9	100.0	100.0	

The table above shows the response of the staff to the question, **does FD communicate to the squatters in Kalulu on the importance of having a forest reserve?** The table reads as follows. There are a total of nine (9) staff members representing 100 per cent. Eight (8) representing 88.9 per cent answered yes while one (1) representing 11.1 per cent answered no. A pie chart of this representation is shown on the next page.

Does the organisation communicate with the community about importance of having a forest reserve?



The research revealed that although the FD does communicate to the squatters of Kalulu on the role of a forest reserve, this message is however often tailored in a negative way as the main essence of the delivering this message is to inform people on why they need to leave Kalulu and not why Kalulu is important and how it contributes to the welfare of the environment. The message is not centred on bringing about awareness for environmental sustainability through education and transmission of knowledge which can bring about social change.

The research further revealed that although information is given out to show the relationship between the forest and the water catchment area in Kalulu Forest, it is not explicit enough to enlighten the people on the negative socio-economic effects that may arise from deforestation in relation to this. Contamination caused by chemicals such as fertilizer used during farming on the soil and the water table is also not communicated.

5.1.1 Campaign Strategies on A forestation in Kalulu

Table IX

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	8	88.9	88.9	88.9
No	1	11.1	11.1	100.0
Total	9	100.0	100.0	

The table above shows the response of the staff to the question; **does the organization have any strategies or campaigns that give out information to the community in Kalulu Forest on dangers of deforestation and the importance of a forestation?** The table reads as follows. There are a total of nine (9) staff members representing 100 per cent. Eight (8) representing 88.9 per cent answered yes while one (1) representing 11.1 per cent answered no.

Although 88.9 per cent of the employees stated that they do have strategic campaigns in place that give out information to the people of Kalulu on the importance of a forestation in terms of sensitization and education meetings, this is not carried out on

a recurring and vigorous manner. This is because the FD has stated explicitly that there should be no squatters in the forest as this is against the law and carrying out such campaigns would only encourage the people to stay in the forest. These campaigns are often rejected by the squatters as they seem to focus on benefiting the forest without taking into consideration the socio-economic constraints that forced them to settle in Kalulu in the first place.

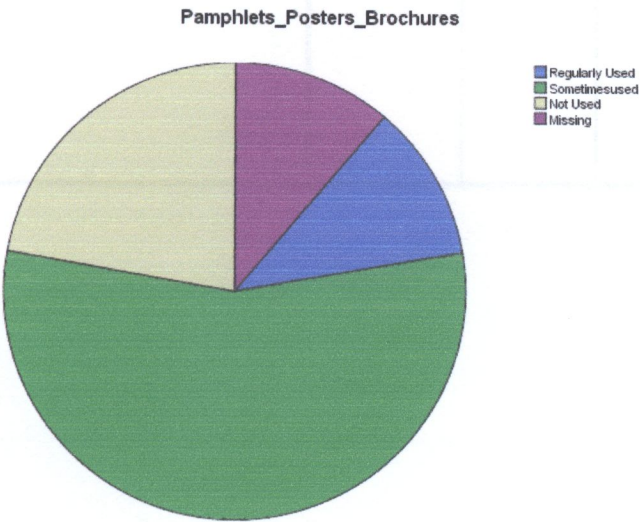
Other constraints that prevent this from occurring stem from lack of resources such as man power and funding in monetary terms and transport, as well as a lack of political will. Intervention by political leaders has also hindered the FD in performing their responsibilities and implementing projects that would successfully bring about sustainable environmental development.

The tables numbered from X to XV below shows responses on the effectiveness of medium used to communicate with the community. The fields that read missing are not applicable or had no response from the staff. The Staff had chosen one of three options, regularly used, sometimes used or not used and the results are shown on the pages that follow. The corresponding pie charts are just under the tables.

PAMPHLETS, POSTERS AND BROCHURES

Table X

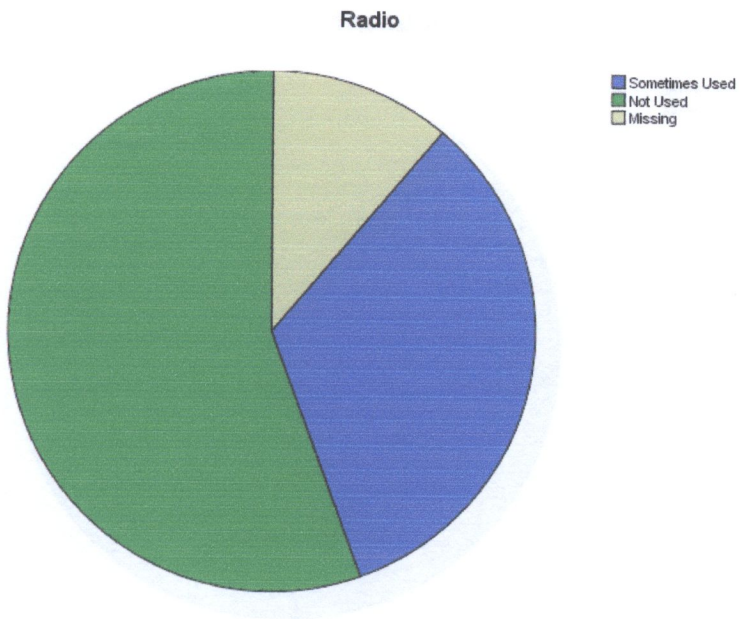
	Frequency	Percent	Valid Percent	Cumulative Percent
Regularly Used	1	11.1	12.5	12.5
Sometimes used	5	55.6	62.5	75.0
Not Used	2	22.2	25.0	100.0
Total	8	88.9	100.0	
missing Not applicable	1	11.1		
Total	9	100.0		



Radio

Table XI

	Frequency	Percent	Valid Percent	Cumulative Percent
Sometimes Used	3	33.3	37.5	37.5
Not Used	5	55.6	62.5	100.0
Total	8	88.9	100.0	
Missing Not applicable	1	11.1		
Total	9	100.0		

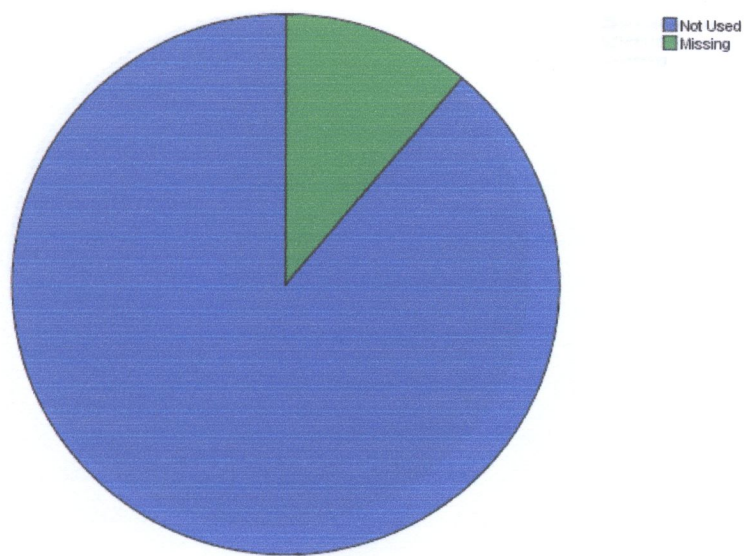


Television

Table XII

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Not Used	8	88.9	88.9	88.9
Missing Not applicable	1	11.1	11.1	100.0
Total	9	100.0	100.0	

Television

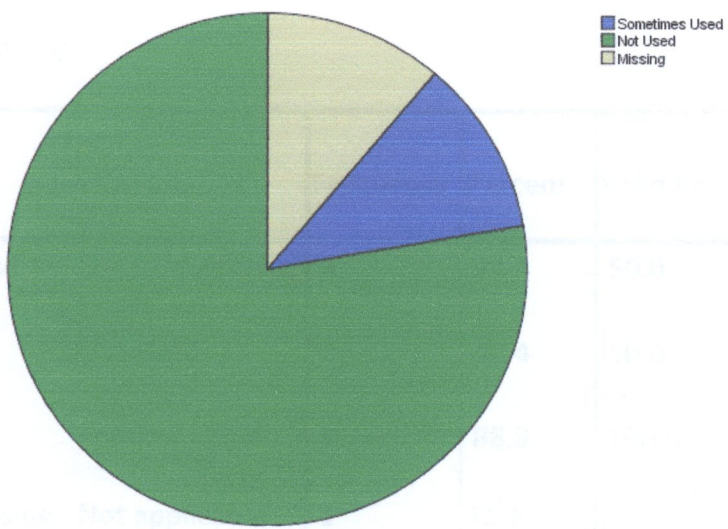


Computers

Table XIII

	Frequency	Percent	Valid Percent	Cumulative Percent
Sometimes Used	1	11.1	12.5	12.5
Not Used	7	77.8	87.5	100.0
Total	8	88.9	100.0	
Missing Not applicable	1	11.1		
Total	9	100.0		

Computers



Participatory Communication

Table XIV

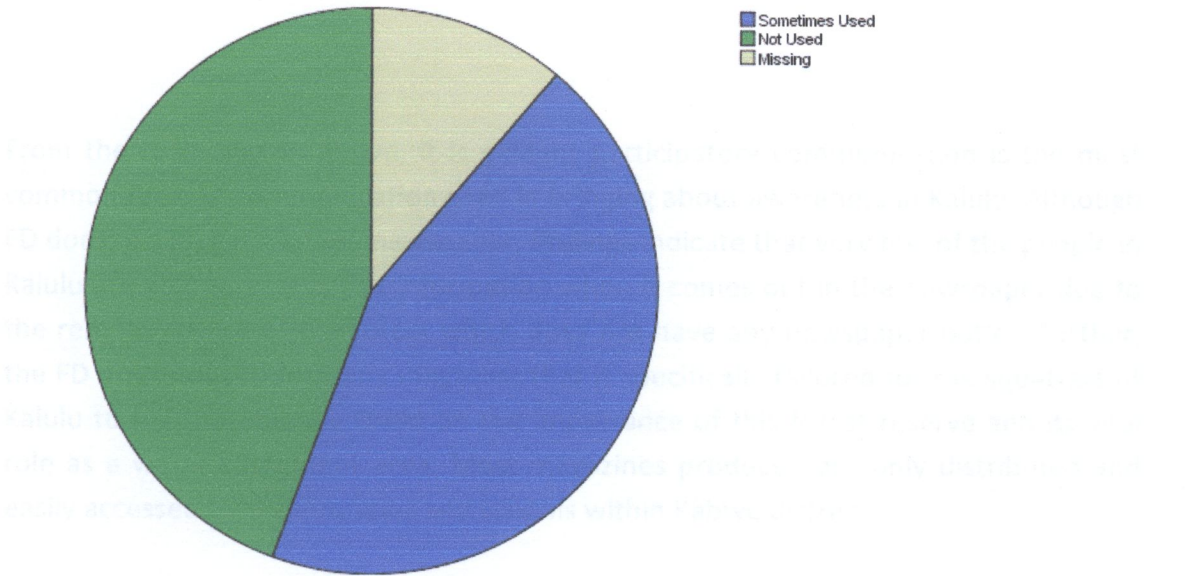
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Regularly Used	4	44.4	57.1	57.1
	Sometimes Used	3	33.3	42.9	100.0
	Total	7	77.7	100.0	
Missing	No response	1	11.1		
	Not applicable	1	11.1		
	Total	2	22.2		
Total		9	100.0		

Magazines and Newspapers

Table XV

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes Used	4	44.4	50.0	50.0
	Not Used	4	44.4	50.0	100.0
	Total	8	88.9	100.0	
Missing	Not applicable	1	11.1		
Total		9	100.0		

Magazine and Newspaper



The table below shows an executive summary of all these forms of communication shown in the previous tables.

	Number of respon- den- ts	Regularly used	Sometimes used	Not used	Not applicable	No response	Total
Pamphlets/ Posters/ Brochures	8	11.1%	55.6%	22.2%	11.1%	0%	100%
Radio	8	0%	33.3%	55.6%	11.1%	0%	100%
Television	8	0%	0%	88.9%	11.1%	0%	100%
Computers	8	0%	11.1%	77.8 %	11.1%	0%	100%
Participatory Communication	8	44.4%	33.3%	0%	11.1%	11.1%	100%
Magazines and Newspapers	8	0%	44.4%	44.4%	11.1%	0%	100%

From the table shown above, it is evident participatory communication is the most common form of communication used in bringing about awareness in Kalulu. Although FD does use magazines and newspaper, findings indicate that very few of the people in Kalulu are able to access this information when it comes out in the newspaper due to the remote nature of the forest which does not have any newspaper outlet. Further, the FD does not produce any magazine that is specifically tailored for the squatters of Kalulu to try and educate them on the importance of this forest reserve and its vital role as a water catchment area. Most magazines produced are only distributed and easily accessed by communities and schools within Kabwe district.

Participatory communication is used sparingly and is often not used as it should be. That is to say that external change agents drive the processes, with little to no room for participation. This approach is a linear, monologue, top-down communication. Thus, it has failed to change individual and community attitudes and practices that act as barriers to effective anti-deforestation communication. Failure to stimulate positive community dialogue about deforestation has prevented the squatters from critically analyzing the rate of deforestation in the forest and the formulation of relevant solutions.

Although radio has proven to be an effective tool in bringing about sustainable development in many social and economic spheres, this mode of communication has not been fully utilized by the FD due to the fact that not only does Kalulu not have a community radio station, but the area also lacks access to electricity. Further, in spite of the squatters being able to access certain radio stations such as ZNBC's Radio One with the use of batteries, the FD has not taken advantage of this scenario by collaborating with Radio One to produce short documentaries, radio talk shows, jingles or discussions consisting of stakeholders and opinion leaders from the area, that are specifically meant for the squatters of Kalulu.

Live performances through theatre and drama such as plays, songs and poems that consist of the local people are neither produced nor planned for. Drama, when wisely used, can be an effective tool in developing social change especially, if the plays are acted by the locals who fully understand and are a part of the socio-economic and cultural aspects of the community. Theatre and drama are of great importance in communication for development in rural areas.

Pamphlets, posters and brochures are only produced and distributed for the community of Kabwe and not the squatters of Kalulu. Perhaps this can be alluded to the fact that there are no schools, clinics and other buildings where social services are offered and can act as a place where these can be displayed and have people look at and read information based on deforestation. However, the FD can take advantage of meetings held by agriculture extension officers and by the squatters themselves to show and distribute these short forms of literature

5.2 Communication with Regional and National Superiors

Communication is an important tool for growth and development. This is more importantly true in an organization where staff members need to effectively communicate and collaborate with their superiors in order to share information about

new programs of operation, policy, bureaucracy, sustainability as well as cooperate responsibility.

For an organization such as the FD, communication is particularly important as it assists in bringing about education and awareness o new environmental laws and how best they can be implemented. Communication also assists the FD not to move out of their respective boundaries and aides them in collaborating with various respective partners.

As in most government organizations, the FD has to follow a standard protocol and communicate with both their regional and national superiors when implementing programs. This is more so as the FD still operates under a rigid and centralized system.

The tables below show the frequency of the different forms of communication used by the FD employees in communicating with their regional and national superiors using meetings, letters and visits.

Communication with Regional and National Superiors using Meetings

Table XVI

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	8	88.9	88.9	88.9
No	1	11.1	11.1	100.0
Total	9	100.0	100.0	

Eight (8) of the staff members representing 88.9 per cent stated that they use meetings to communicate with their superiors, These meetings are held when necessary and not every week or for example, every Monday in order to update the organization and make plans. One (1) Of the staff members representing 11.1 stated that meetings are not used when discussing with superiors.

Communication with Regional and National Superiors using Letters

Table XVII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	5	55.6	55.6	55.6
No	4	44.4	44.4	100.0
Total	9	100.0	100.0	

Five (5) of the FD staff representing 55.6 per cent stated that they used letters when communicating with their superiors. Four (4) of the FD staff stated that they do not use letters in communicating with their superiors.

Communication with Regional and National Superiors using Visits

Table XVIII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	4	44.4	44.4	44.4
No	5		55.6	100.0
Total	9	100.0	100.0	

Four (4) of the FD staff representing 44.4 per cent indicated that visits were used when trying to communicate with their superiors while five (5) representing 55.6 per cent indicated that visits were not used.

Cross tabulations showing whether staff members are satisfied a particular method of communication.

Cross Tab of the Meetings Method

Table XVIX

		Satisfied by methods of Communication?		
		Yes	No	Total
Communication with Yes		3	5	8
Superiors using				
meetings	No	0	1	1
Total		3	6	9

		Satisfied by methods of Communication?		
		Yes	No	Total
Communication with Yes		1	4	5
Superiors Using Letters				
	No	2	2	4
Total		3	6	9

		Satisfied by methods of Communication?		
		Yes	No	Total
Communication with Superiors by visit	Yes	1	3	4
	No	2	3	5
Total		3	6	9

Results showing whether the staff members were satisfied with by the method of communication or not. General overview

Satisfied by methods of Communication?

Table XXII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	3	33.3	33.3	33.3
No	6	66.7	66.7	100.0
Total	9	100.0	100.0	

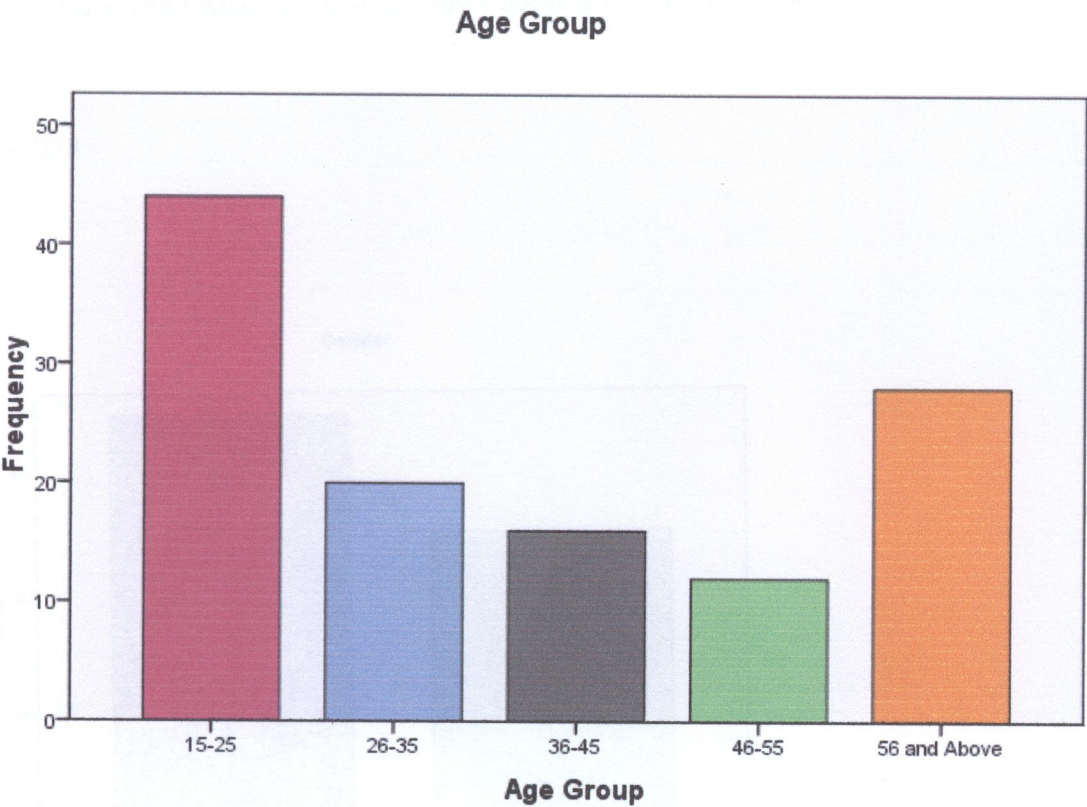
The results indicate that out of the total nine FD members, only three (3) representing 33.3 per cent were generally satisfied with the method(s) of communication with their superiors. Six (6) of the members representing 66.7 per cent were not satisfied with the method(s) of communication that they used to communicate with their superiors.

Meetings were chosen as the most common form of communication used in communicating with superiors whilst visits were the least chosen mode of communication.

5.3 Findings on Kalulu Forest Squatters

5.3.1 Age Group

Table XXII



The respondents were chosen from the age of 15 and above. This was because the researcher wanted to include a wide spectrum of both the youths and senior citizens in the study. The researcher distributed a total of 120 questionnaires.

From the age group between 15 to 25 years, forty-four (44) respondents were interviewed representing 36.7 per cent. From the age group 26 to 35 years, twenty (20) respondents representing 16.7 per cent were interviewed. In the group aged between 36 to 45 years, sixteen (16) respondents representing 13.3 per cent were interviewed. Twelve (12) respondents aged from 46 to 55 were also interviewed representing 10.0 per cent. Twenty-eight (28) respondents representing 23.3 per cent were also interviewed and these were from the age of 56 and above.

5.3.2 Gender

As earlier stated, a total of 120 questionnaires were distributed. Of these, seventy (70) were male representing 58.3 per cent and fifty (50) representing 41.7 per cent were female. Although the researcher had initially intended to capture sixty (60) males and sixty (60) females, this was made difficult due to some of the limitations indicated in Chapter Two. The histogram below shows depicts this information.

Table XXIII



5.3.4 Education

The table below depicts the levels of education obtained by the respondents. The researcher found this information to be valid so as to try and show the complex nature of Kalulu in terms of people having come from different educational backgrounds and still ending up as squatters in the forest.

From the table, eight (8) of the respondents representing 6.7 per cent had no formal education. Forty-four (44) of the respondents representing 36.7 per cent had been to between grades one (1) to seven (7). 23.3 percent representing twenty-eight (28) of the respondents had been to junior secondary school from grades 8 to 9. Another twenty-eight (28) of the respondents representing 23.3 per cent and been to senior secondary school from grades 10 to 12. Those that had attended college and university tertiary education represented 10.0 per cent of the total twelve (12) respondents.

Highest Level of Education Attained

Table XXIV

	Frequency	Percent	Valid Percent	Cumulative Percent
No formal education	8	6.7	6.7	6.7
Grade 1-7	44	36.7	36.7	43.3
Grade 8-9	28	23.3	23.3	66.7
Grade 10-12	28	23.3	23.3	90.0
College and University level	12	10.0	10.0	100.0
TOTAL	120	100.0	100.0	

5.3.5 Sources of Communication and Information

The researcher tried to establish the modes of communication and access to information that existed within Kalulu by analyzing the common uses of media. Key form of communication looked at were the cell phone, radio, television, computers and newspapers.

The characteristics of responses to access to various media were as follows;

Access to cell phone

Table XXV

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	64	53.3	53.3	53.3
No	56	46.7	46.7	100.0
TOTAL	120	100.0	100.0	

As is reflected above, sixty-four (64) of the respondents representing 53.3 per cent have cell phones whilst fifty-six (56) of the respondents representing 46.7 per cent do not have cell phones.

One of the major factors influencing the decision by certain individuals, who have enough money to buy cell phones and yet chose not to do so, is the fact that there is neither electrical nor strong solar energy in Kalulu with which these phone batteries need to be recharged. Those who have cell phones have to walk or ride a bicycle to Mukobeko Prisons area in order to charge their phones. Airtime is also difficult to access although, there are two agents of Airtel within the forest.

Access to Radio

Table XXVI

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	120	100.0	100.0	100.0

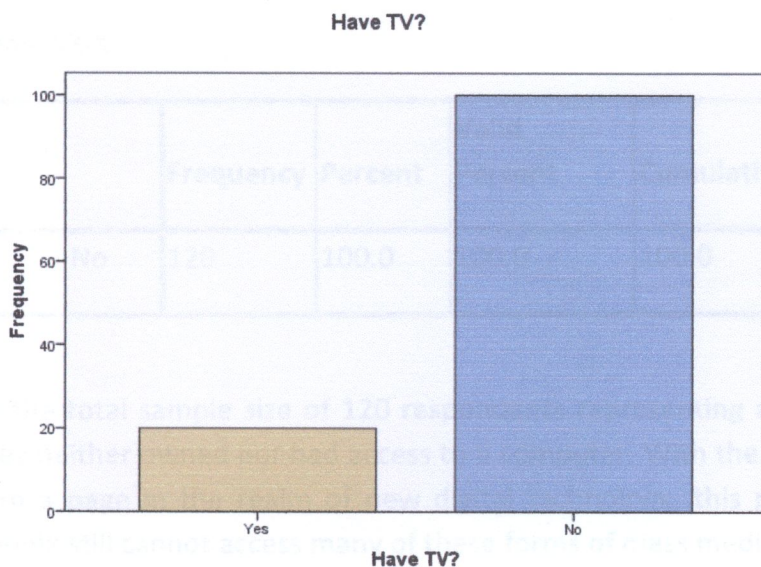
Of the total sample of 120 respondents, 100 per cent own and have access to radio. The most common radio station listened to is ZNBC’s Radio One although this can at times experience many interferences. Radio batteries are used.

Own a Television

Table XXVII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	20	16.7	16.7	16.7
No	100	83.3	83.3	100.0
TOTAL	120	100.0	100.0	

16.7 per cent representing twenty (20) respondents own a television set whilst 83.3 per cent representing a hundred (100) respondents do not own a television. Although 16.7 per cent do own a television set they are unable to watch anything due to the fact that there is no electricity. The researcher discovered that some of those who do own a television set are at times able to view it with the use of car batteries. Unfortunately, the buying of these batteries can be expensive and just as the cell phone. Recharging them can only be done at Mukobeko which is 70 kilometres from the forest.



Have Access to a Newspaper

As shown in the table below, forty (40) respondents have access to a newspaper representing 33.3 per cent. Eighty (80) respondents representing 66.7 per cent do not have access to a newspaper. Although a good majority of the squatters can read and write, they cannot easily access a newspaper as no paper, be it government or private owned has an outlet in Kalulu.

Squatters who are able to access newspapers are those who frequent Kabwe town to sale products or for any other business.

Table XXVIII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	40	33.3	33.3	33.3
No	80	66.7	66.7	100.0
TOTAL	120	100.0	100.0	

Have access to a Computer?

Table XXIX

	Frequency	Percent	Valid Percent	Cumulative Percent
No	120	100.0	100.0	100.0

Of the total sample size of 120 respondents representing a 100 per cent stated that they neither owned nor had access to a computer. With the vision of Zambia having to turn a page in the realm of new digital technology, this poses as a huge threat if people still cannot access many of these forms of mass media.

MEDIA USE

The table below represents the media most used in receiving information.

Table XXX

Use of Media	Number of respondents	Regularly used	Sometimes used	Rarely Used	Never used	Total
Newspaper	120	0%	33.3%	20%	46.7%	100%
Radio	120	100%	0%	0%	0%	100%
Television	120	0%	0%	6.7%	93.3%	100%
Computers	120	0%	0%	0%	100%	100%

From the table above, the most commonly used form of media used in receiving information is Radio. Although the squatters would want to access other forms of media, it is difficult mainly due to lack of electricity and the remoteness of the area.

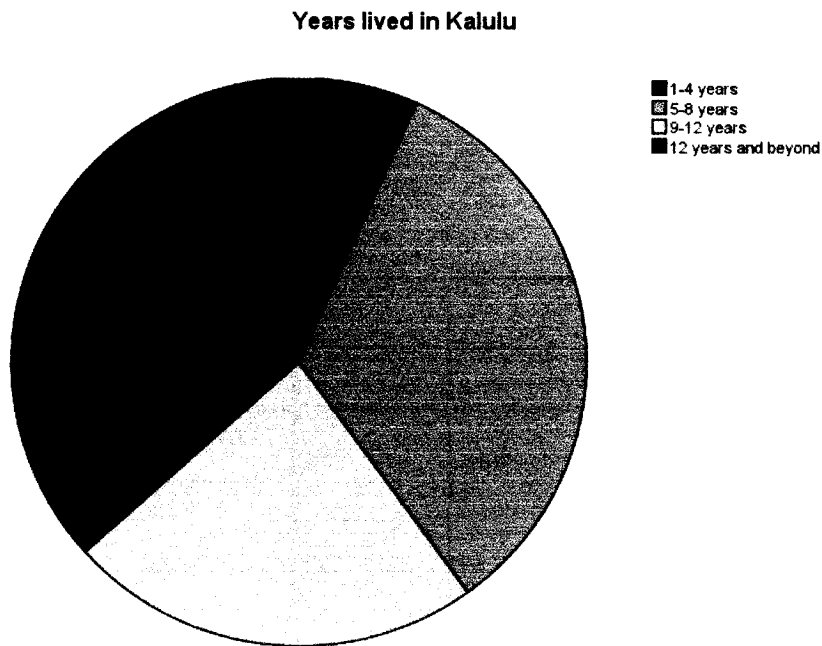
There are still no plans to electrify Kalulu as it is still considered a Forest Reserve and so plans are often tailored towards the support of the environment and not the squatters. Those who do have television-sets cannot access this form of mass media due to the lack of electricity. Both state owned and private newspapers do not have outlets in Kalulu Forest and so print media is also inaccessible.

Due to these factors even the headmen have problems in communicating with their subjects and often take advantage of community club meetings to make announcements and also the use of door-to-door method in cases of urgency.

Years Lived in Kalulu

Table XXXI

	Frequency	Percent	Valid Percent	Cumulative Percent
1-4 years	8	6.7	6.7	6.7
5-8 years	40	33.3	33.3	40.0
9-12 years	28	23.3	23.3	63.3
12 years and beyond	44	36.7	36.7	100.0
TOTAL	120	100.0	100.0	



As earlier stated in Chapter One, Kalulu Forest Reserve was occupied by the squatters in late 1995 and early 1996. As of late 1996, Kalulu only had 97 squatters but is currently home to over 5000 squatters with many still moving into the forest. The table and the pie chart show the number of years represented by the respondents of the study and reads as follows; Eight (8) of the respondents representing 6.7 per cent have been living in Kalulu for 1 to 4 years. Forty (40) of the respondents representing 33.3 per cent have been living in Kalulu for in-between 5 to 8 years. 23.3 per cent representing twenty-eight (28) of the respondents had been living in Kalulu for 9 to 12 years. Forty-four (44) of the respondents representing 36.7 per cent have been living in Kalulu for 12 years and above.

The researcher further tried to establish where the squatters had come from. The researcher categorized this in accordance to provinces and not specific towns. This information was deemed to be of vital relevance as there has been a huge assumption that the forest has been settled by only people from within Kabwe.

From the research, it is clear to see that the majority of the squatters interviewed have lived in the forest for 12 years and beyond.

The researcher categorized Central Province into two categories which are indicated as Central Province (within Kabwe) and Central Province (outside Kabwe). Other

provinces such as Luapula, Southern and Western Provinces did not have representation from this specific group of respondents.

Lived Before Kalulu

Table XXXII

	Frequency	Percent	Valid Percent	Cumulative Percent
North-Western Province	12	10.0	10.0	10.0
Lusaka Province	16	13.3	13.3	23.3
Central province (outside Kabwe)	24	20.0	20.0	43.3
Central province (within Kabwe)	39	32.5	32.5	75.8
Eastern Province	1	0.8	0.8	76.7
Copperbelt province	20	16.7	16.7	93.3
Northern province	8	6.7	6.7	100.0
TOTAL	120	100.0	100.0	

Most of the persons interviewed, of working age, stated that they were in formal employment and that the loss of jobs forced them to move into Kalulu so as to be to find alternative means of gaining an income. The researcher tried to establish the per cent of the squatters that had been in formal full-time employment before moving into Kalulu. It was found that a majority of the youths who were part of this study were not and have never been in formal full-time employment.

From the representation given below, twenty-eight (28) of the respondents representing 23.3 per cent had been in full-time formal employment whilst ninety-two (92) of the respondents representing 76.7 per cent were not in full-time formal employment.

Were you in Formal Employment before coming to Kalulu Forest?

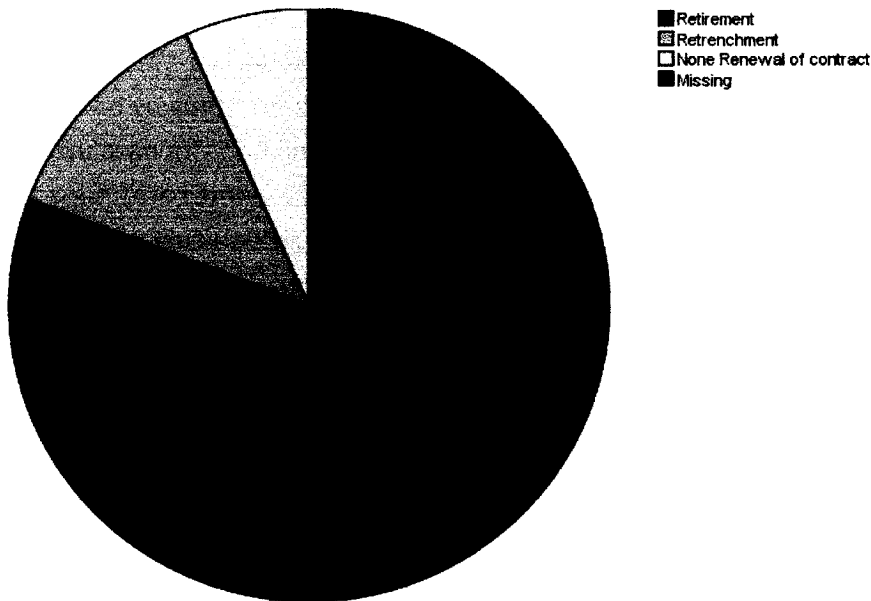
Table XXXIII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	28	23.3	23.3	23.3
No	92	76.7	76.7	100.0
TOTAL	120	100.0	100.0	

Most of the squatters that were in formal employment cited retrenchment, retirement and none renewal of contract as the reasons for having lost employment. Five (5) respondents representing 4.2 per cent cited retirement as the reason for having lost employment. Fifteen respondents representing 12.5 per cent cited retrenchment as the reason for having left employment and eight (8) respondents representing 6.6 per cent cited none renewal of contract as the reason for leaving employment.

This is represented in the pie chart on the next page.

If yes why did you leave employment?



The reseach went on to establish the reasons why after having left employment, people had decided to come and settle specifically in Kalulu in spite of them knowing that it was a forest reserve. Most of the reasons centered around issues such as;

- Proximity-- after having left employment and whilst waiting for there dues, people who had nowhere to go as they waited for money to assist them in making this transit, decided to settle in the forest because it was nearer to Kabwe town and they could easily keep checking for there remuneration package as well as access other social services.
- Access to Land-- some of the squatters came into Kalulu inorder to gain access to land for agirculture as well as settlement. As earlier stated in Chapter One, Kalulu has six headmen who are retired characoal burners and were some of the first people to settle there and hence gained this title. It was these headmen who allocated land to people moving into the forest. Some of the squatters had left houses in the townships were they came from but had on means of sustaining themselves in terms of incomes which could led to access to food, health and education. They decided to sale or lease these homes, although the market value for Kabwe houses is extremely low, and move into

the forest to making a living. Those in charcoal production moved into the forest to make a living through the use of certain indigenous trees such as Umuombo and Umuputu which are very good.

- **Family Ties**-- one of the other reason cited for having moved into Kalulu especially by squatters who came from outside Kabwe were that they were asked to come there by relatives. They were encouraged to come and settle in the area after having lost employment, becoming widowed or orphaned. These squatters came with their children and other dependents. The news of Kalulu having easily accessible and arable land caused a domino effect in the sense that those who came to settle there asked other family members to join them who also in turn encouraged friends and relatives to join them by telling them about the advantages of this area.

Certain relations and friends who came to visit, simply never returned to their homes but decided to ask the necessary headman for land to settle and start farming and eventually start a family.

Although it was a clear cut assessment that land in the forest was being cleared for agriculture, the researcher wanted to know if this trend was practised by everyone. From the table below, from a total of 120 respondents, a hundred and four (104) representing 86.7 per cent stated that they cleared land to grow crops. Sixteen (16) of the respondents representing 13.3 percent do not clear land to grow crops. The table and the pie chart below show this representation.

Do you clear land to grow crops?

Table XXXIV

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	104	86.7	86.7	86.7
No	16	13.3	13.3	100.0
Total	120	100.0	100.0	

Most of the crops grown in Kalulu include maize, soya beans, sweet potatoes, groundnuts and vegetables. Cotton and sunflower are grown on a small scale.

The crops grown contribute to household food security among the squatters. However, excess maize that grown in is sold to FRA who has set up a depot called Makupu Depot in the forest. The soya beans are sold to Ashworth Farm which lies to the south of the outskirts of Kalulu. The soya beans are used for animal feed.

Fertilizer such as Urea and Compound D are used in farming. Natural fertilizers such as animal manure are rarely put to use. Other crops such as sweet potatoes, groundnuts and vegetables are sold to the residence of Kabwe.

The squatters do not only clear land to grow crops, but also cut trees for various uses such as fuel wood for cooking and charcoal for sale. Houses are made of tree stamps covered with mud made from cement and roofs thatched by grass. The tables on the next page depict the number of people who cut trees and there specific uses.

Do you cut down trees?

Table XXXV

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	96	80.0	80.0	80.0
No	24	20.0	20.0	100.0
TOTAL	120	100.0	100.0	

The table above reads as follows. Ninety-six (96) of the respondents representing 80 per cent do cut trees whilst twenty-four (24) of the respondents representing 20 per cent do not cut trees. It is important to note that although this percentage of squatters may not take part in the cutting of trees, they do have use for them and have other people help cut the trees for them such as family and friends. For example, some of the women would rather ask their male children, dependents and spouses to cut the trees for their domestic use than do so themselves. As earlier stated, charcoal production, firewood and the building of shelter are the most common uses of trees in

Kalulu. From the research, forty-six (46) of the respondents representing 36.7 per cent cut trees mostly for charcoal production. 43.3 per cent representing fifty-four (54) of the respondents cut trees chiefly for firewood whilst 20 per cent representing twenty (20) of the respondents cut trees almost entirely for houses. This is shown in the table below.

Uses of Trees

Table XXXVI

	Frequency	Percent	Valid Percent	Cumulative Percent
Charcoal Production	46	36.7	36.7	36.7
Firewood	54	43.3	43.3	80.0
Building houses	20	20.0	20.0	100.0
TOTAL	120	100.0	100.0	



Fig XII: THE PICTURE ABOVE SHOWS CUT TREES BEING TRANSPORTED BY CATTLE FOR THE BUILDING OF A HOUSE FOR NEWLY-WEDS IN KALULU

Although charcoal production is not as rampant in Kalulu as it was in the past due to the loss of indigenous trees, the trend is still very much alive. The FD has stated that many of these charcoal burners do not have licenses. However, it is important to note that the issuance of licenses is made more difficult by the fact that there is no one within the FD to monitor if the trees are cut in a sustainable manner and if all the squatters cutting trees have valid up to date licenses. The researcher found that out of the 120 respondents, forty-four (44) representing 36.7 per cent produced charcoal whilst seventy-six (76) of the respondents representing 63.3 per cent do not produce charcoal.

The table below depicts this representation.

Table XXXVII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	44	36.7	36.7	36.7
No	76	63.3	63.3	100.0
TOTAL	120	100.0	100.0	

The researcher further investigated the number of charcoal producers who had licenses. Each bag of charcoal produced should accrue a payment of five thousand kwacha=K 5000.00. The research found that of the forty-four (44) who stated that they produce charcoal twenty (20) of these respondents representing 16.7 per cent stated that they had licenses whilst twenty-four (24) of the respondents representing 20 per cent did not have any. Most of the three main reasons stated for not having a licenses were that firstly they were too expensive and lastly that they had no idea as to where exactly they had to pay and obtain the licenses.



Fig XIII:A MAN TRANSPORTING CHARCOAL FROM KALULU TO KABWE TOWN

Table showing Squatters with a license

Table XXXVIII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	20	16.7	45.5	45.5
No	24	20.0	54.5	100.0
Total	44	36.7	100.0	
Missing Not applicable	76	63.3		
TOTAL	120	100.0		

**Do you produce Charcoal? Do you have a License? CROSS
TABULATION**

Table XXXIX

		Do you have a license?		
		Yes	No	Total
Do you produce charcoal?	Yes	20	24	44
Total		20	24	44

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Do you produce charcoal? * Do you have a license?	44	36.7%	76	63.3%	120	100.0%

The charcoal producers indicated that most of the charcoal is sold to the residence of Kabwe at twenty five to thirty thousand kwacha= (K25 000.00 to K30 000.00) per 25 kilo gram bag. This charcoal is often sold at the market places in Kabwe as well as within the residential areas, by going from one door to another. However, in certain

cases people of various destinations buy charcoal from the squatters, before they reach the market, as they drive along the famous Ndola road.

Although the squatters of Kalulu know about the FD, their knowledge of them seems to be limited around two main things which are, in a nutshell, that they own the forest and that they are in-charge of telling the squatters to leave the forest. This narrow view of the FD has in more ways than one led to the squatters not conserving the forest as their own and giving no care for its depletion. Of the 120 squatters who took part in this research, not one had ever taken part in a forest conservation exercise. The FD is supposed to be viewed as a partner in spear heading environmental concerns whilst taking into consideration that most of these concerns are brought about as a result of human activities. Thus human beings must be involved in the problem sharing nature of these concerns.

Environmental problems differ from region to region and so should be fully understood whilst taking into consideration all the vital and necessary social, economic and cultural factors of the people affected.

As earlier stated, of the 120 squatters who took part in this study, none had ever been part in forest conservation exercise. This poses a huge threat to the forest as nothing has so far been done to try and conserve it. No thorough education and awareness has been brought forward and no conservation exercise in form of tree planting or any other has been sort. However, in spite of all this, the researcher went on to try and establish as to whether or not the squatters thought that a Deforestation Awareness Campaign (DAC) was important. The results showed that eighty (80) of the respondents representing 66.7 per cent thought that a DAC was important whilst forty (40) of the respondents representing 33.3 per cent stated that they did not feel that a DAC was important. Most of the squatters who stated that a DAC was not important stated that it was only imperative if the campaign was started at the very minute that the problem was identified and not after it had gone done hill and required for urgent and prompt action which would probably end up being disadvantageous to them.

Message or content development is critical in the formulation of a successful *deforestation campaign and just as importantly are the channels used in delivering this message*. Given the remoteness of the forest, the researcher tried to establish from the 66.7 per cent of the respondents who felt that a DAC was important, what media channels they felt would be most effective in delivering this information. Twenty (20) of the respondents representing 16.7 per cent chose radio as the most effective way of getting this information across. Twenty-eight (28) of the respondents chose interpersonal/communication on a one-on-one basis representing 23.3 per cent and thirty-two (32) of the respondents representing 26.7 per cent chose group discussions. This means that group discussions were the most common mode of communication chosen for communicating a DAC as can be seen below.

Best Mode of Communication for a DAC

Table XXXX

	Frequency	Percent	Valid Percent	Cumulative Percent
Radio	20	16.7	16.7	16.7
Interpersonal Communication (Communication on a one to One Basis)	28	23.3	23.3	40.0
Group Discussions	32	26.7	26.7	66.7
Total	80	66.7	100.0	100.0
Missing Not applicable	40	33.3		
TOTAL	120	100.0		

The squatters are largely aware that Kalulu is a water catchment area which provides water to the residence of Kabwe. They also possess some local knowledge of the inter relation between the trees and the catchment area. Eighty (80) of the respondents representing 66.7 per cent stated that they were aware that the cutting of trees adversely lowers the water levels whilst forty (40) representing 33.3 per cent stated that they were not aware of this.

The use of chemicals and certain fertilizers can be very harmful to the soil and all that lies therein such as the water table below. Education in this regard is very important as people need to know and understand the negative effects of using these commodities and what readily available and environmentally friendly alternatives can be used in place of materials that damage the soil and contaminate the soil.

Lukanga Water and Sewerage Company (LWSC) is in-charge of water supply and has its water works based in Kalulu. The LWSC and the FD collaborate on various occasions as their fields of interest in the forest are highly inter-related and dependent on each other. However, there collaboration has not taken awareness and communication as vital and sensitive tools in bringing about change in the habits of the squatters who have been using fertilizers such as Urea and Compound D in there farming which affects the soils fertility. Although there are no specific statistics, according to officials at the LWSC, the use of these fertilizers slowly contaminates the water and has diverse negative effects as the contamination accumulates over time.

Out of the 120 squatters spoken to, fifty-six (56) respondents representing 46.7 per cent stated that they know that the fertilizer contaminates the water whilst sixty-four (64) respondents representing 53.3 per cent stated that they had no idea that the fertilizer was harmful to the soil.

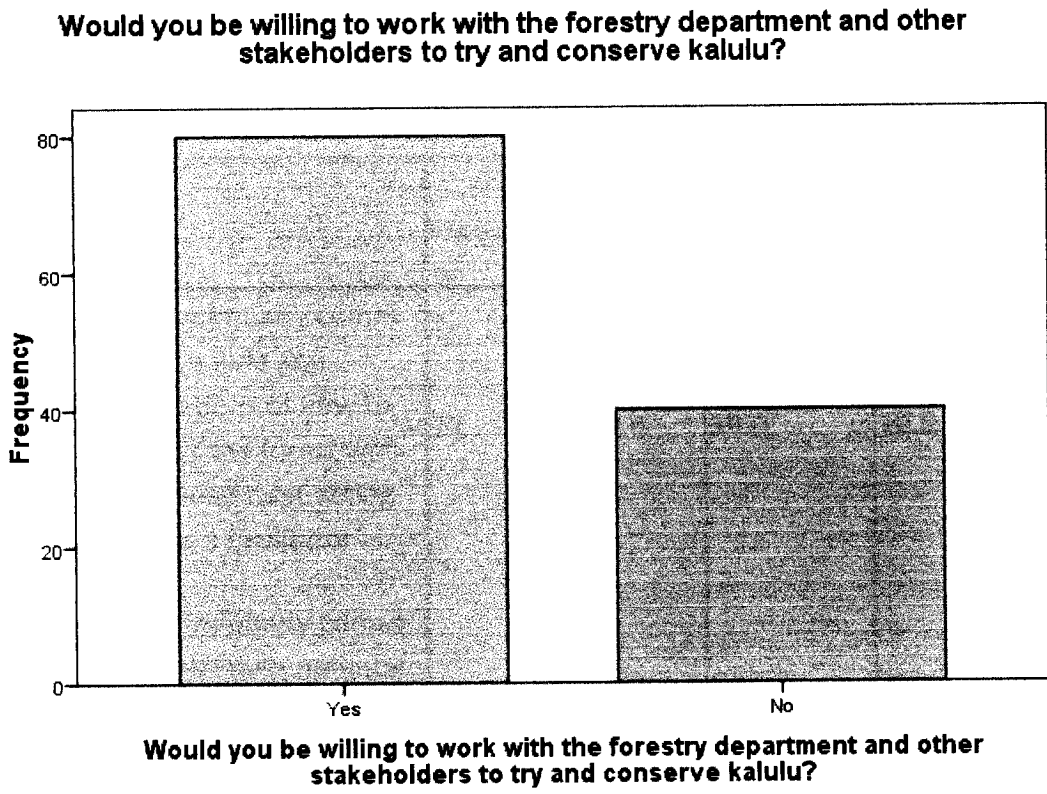
Squatters aware that the use of fertilizer contaminates the water

Table XXXXI

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	56	46.7	46.7	46.7
No	64	53.3	53.3	100.0
TOTAL	120	100.0	100.0	

As earlier stated in Chapter Four, collaboration through participation is an important part of allowing forest communities to provide sustainable development for their environment. It is important to note however, that many a times, what should fully constitute participation is often not followed. Proper applications of participatory communication methods and tools are not enough to ensure a project’s success. Broader contextual requirements are also needed, namely a flexible project framework ,especially in terms of timelines, a politically conducive environment, allowing open and transparent communication; and an enabling attitude by key stakeholders, including project management. Close adherence to these factors is essential for a high level of participation, while lack of these preconditions usually results in lower participation.

When the respondents were asked if they were willing to work with the FD and other stakeholders to eighty (80) of the respondents representing 66.7 per cent stated that they would be willing to work with them whilst forty (40) of the respondents representing 33.3 per cent stated that they would not be willing to work with them.



When asked how they would want this partnership to exist, twelve (12) representing 10.0 per cent of the respondents stated that they would want for the community to come up with rules and regulations with the FD only acting as a facilitator. Forty-four (44) of the respondents representing 36.7 per cent stated that they would want to come up with environmental solutions guided by the FD and other environmental stakeholders whilst twenty-four (24) of the respondents representing 20 per cent stated that they would want the FD to come up with policies and ideas of which the community must follow.

If yes how would you prefer this partnership to exist?

Table XXXXII

		Frequency	Percent	Valid Percent	Cumulative Percent
	The community comes up with Rule and Regulations of how to protect the forest with the Forest dept acting only as a facilitator	12	10.0	10.0	10.0
	The community comes up with Environmental Solutions guided by the Forestry Department	44	36.7	36.7	46.7
	The Forestry Department implements policies and ideas of which the community must follow	24	20.0	20.0	66.7
	Total	80	66.7	66.7	100.0
Missing	Not applicable	40	33.3		
TOTAL		120	100.0		

The fact that the majority of the squatters stated that they would want for the community to come up with environmental solutions guided by the FD shows that they are willing and ready to not only take part in the conservation of Kalulu but that they are focused on making projects their own and work towards environmental

sustainability through the able guidance of the FD. They do however, insist that they would want to plant exotic trees and not indigenous trees so that they can also get some sort of financial benefit.

The majority of the squatters are not willing to move from the forest even if the government found them alternative land and have opted that the various stakeholders in-charge of the forest come up with ways in which they can live in harmony with the forest. Those who have opted not to move from the forest state that the main reasons they do not want to leave is because they are settled there and have families and farms in the area. Those who were willing to move from the forest cited a lack of social and economic amenities such as schools, hospitals, shops, lack of transport and lack of proper sources to information.

The researcher did however note that the majority of those who were willing to move were the youths and not the older and senior squatters. Out of the 120 respondents, forty-four (44) of them representing 36.7 per cent were willing to move from the forest whilst seventy-six (76) of them representing 63.3 per cent were not willing to move from the forest.

Would you be willing to move from Kalulu Forest if the government found you alternate land?

Table XXXXIII

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	44	36.7	36.7	36.7
No	76	63.3	63.3	100.0
TOTAL	120	100.0	100.0	

5.4 In-depth Interviews

5.4.1 Forestry Department

At the FD, the researcher had the opportunity of interviewing the nine staff members as well as one of the staff members who was out of town the entire period that the

researcher was carrying out there investigations via conference call. The respondents stated that even though they have no empirical evidence to diagnose the exact rate of deforestation in Kalulu due to lack of resources, they were able to note that there high rates of deforestation due to the huge disappearance of trees. The area which was once rich with thick vegetation has now become bare and due to the high clearance for farming.

As earlier stated, there is no tree planting exercise in Kalulu because the people there are illegal squatters and the law prohibits the FD from engaging them in such activities. However, in communities where tree planting is exercised, the growth of indigenous trees is carefully monitored even though there is a big problem of transport and so this is not as frequent as they would want it to be. Most of the trees grown in necessities for tree planting exercises in Kabwe and the near surrounding outskirts are done at Mpima Forest Reserve. During tree planting season, the FD goes into various schools and communities to distribute the trees for planting. Unfortunately this is not done in the encroached forest reserves.

The FD also faces the challenge of squatters not only cutting trees and clearing land for agriculture but also pit digging for gravel which is extremely dangerous for the forest as the top soil is being destroyed.

The FD has the Forest Expansion Program (FEP) which is a new strategy countered at identifying an area that needs vigorous tree planting. FEP can be applied to both communities and forests but it is yet to take full thrust as it has not been implemented and its constitution is still being looked into.

The FD has concentrated most of its efforts on the promotion of anti-deforestation campaigns in higher and lower institutions of learning and various communities as well as organizations. They have further adopted an integrated communication approach where issues of environmental awareness are tackled under deforestation campaigns. The FD, through the MTENR, has an ongoing information campaign that is supported by the United Nations Development Program (UNDP) and encompasses other parts of the environment such as issues of climate change.

The campaign focuses on poster production, environmental-civic education and talks in schools, as well as, radio and television programs with the main objective of bringing about environmental awareness and education to the people. The campaign is an on-going one and targets the whole Kabwe.

The campaigns do not involve and are not tailor made for the squatters and the use the selected communication materials is not effective in bringing about awareness and information to the squatters. The campaign does not give alternatives to what can be used in the place of charcoal especially when educating urban based citizens who are the main consumers. The neglect of this vital part of information leads to a negative response even when the receivers of the message have taken and understood it. The campaign also leaves out the squatters who are highly contributing to this vice. This has led to a lot of frustrations amongst the members of the FD.

5.4.2 Ministry of Agriculture (MoA)

The Ministry of Agriculture is a branch of government and its mandate is broadly centered around three (3) main things:

- Teaching farmers on new agriculture methods such as conservation farming through the distribution of pamphlets, group discussions and information awareness campaigns
- Ensure that farming methods that are already being utilized are kept intact through continuous monitoring and ensuring full participation of the recipients
- Distribution of agriculture incentives such as fertilizer, tools and other farming inputs.

The researcher spoke to the Senior Extension Officer for the MoA in Kabwe and found out a number of important matters. The MoA does collaborate with the FD in projects that deal with the environment and natural conservation. They also provide extension services to the people of Kalulu. Although they are concerned about forest depletion, they still need to support the people. They have a Land Has-bury Program which deals with land conservation and agro-forestry.

Most messages concerning sustainable and environmentally friendly farming methods in the forest are delivered through discussions using the method of facilitation. These are usually held at clubs interested in farming. The Senior Extension Officer noted that although the people do tend to get the message, they do not follow that which they learn especially in agro-forestry. One of the factors for this is that the MoA does not give the squatters trees to plant but asks and encourages them to buy their own from small-agro dealers. This is because as a Ministry, they do not grow trees that can

support and sustain these projects. Further, the Ministry does not carry out any massive practical field work to fully illustrate how best this can be achieved.

Some of the extension services offered in Kalulu include that of livestock and stock production. The MoA also encourages the use of animal manure as they have noticed that most of the squatters use artificial fertilizers that can be harmful to the soil. Unfortunately, the rate at which people adopt the message is not very positive.

The ministry is very willing to come up with a project in collaboration with the FD, the squatters of Kalulu and other stakeholders that have an interest in the forest to try and conserve it without disrupting the lives of the people within it.

5.4.3 Wild Life and Environmental Conservation of Zambia (WLECZ)

The researcher spoke to one of the members of the WLECZ which is an organization that is partly in-charge of Chongololo Conservation Club and Chimpembebe Conservation Club. The WLECZ works with the FD, MoA, department of fisheries and the Wild Life Authority.

The members of the WLECZ travel to the rural parts of Zambia especially in schools to implement conservation programs. Rural settings are especially better placed in the conservation of flora and fauna.

The most common mode of communication used in transmitting this information is radio but in areas with problems in accessing radio, magazines and pamphlets are used. However, magazines and pamphlets are also frequently used in areas where radio is prominently used.

The UN declared the year 2011 as the international year of forests with the focus on forest restoration by means of trying to encourage tree planting through the use of tree nurseries. This is very important especially for Zambia which, unlike in the realm of most health programs, is still struggling to come up with effective measures in terms of communicating this vice and implementing sustainable and culturally acceptable solutions.

WLECZ states that the key point of conserving Kalulu forest should be through education. The squatters need to understand the not only importance of Kalulu as a protector of the water catchment area which was strategically put there, but also why this environment must be preserved for future generations and not just themselves.

Although charcoal must be continued to be produced, as electricity is not only scarce but totally unavailable in certain parts of the country, the worry of WLECZ is the manner in which trees are being depleted especially in Kalulu.

The WLECZ is willing to work with the squatters, the FD and other stakeholders to try and conserve Kalulu but emphasis that the people living in the forest must be educated, and thereafter, they should be put in-charge of their own affairs. They should be educated into knowing that Kalulu is their own resource and they should be their own managers and destroying it will only cause them to suffer. They should be educated into understanding the important relationship between forests and water, and that without forests, water will not and cannot flow.

The official from the WLECZ further observed that there was far too much piece-meal implementation of the conservation of the environment in terms of policy. There needs to be more coordination amongst stakeholders and environmental concerns should be tailored made to suit specific areas of focus taking into account the culture, beliefs and attitudes as well as which modes of communication should be used in each specific scenario.

The researcher observed that although the WLECZ are willing to work with the squatters, they do not agree with their suggestion that exotic and not indigenous trees should be planted. The few existing indigenous trees must be preserved.

5.4.4 Lukanga Water and Sewerage

Lukanga Water and Sewerage is the water utility and sanitation company for Central Province and has its headquarters in Kabwe. It is the only water utility company situated in the whole province. Lukanga Water and Sewerage is interested in Kalulu because its water works are situated there. The water works in Kalulu supply water to the high cost and low cost areas as well as certain areas near the outskirts of Kabwe town.

The researcher spoke to the Business Development manager who informed stated that the utility company is extremely worried by the levels of encroachment in Kalulu which is now turning into more of an establishment. Although the company has put measures to ensure that the water works are protected by fencing the area and having security personal patrol the area 24 hours a day, the fence that once stood firm has been vandalized and the squatters trespass through the area whenever they want to. The squatters go to the water works to draw water using the available tap and water from the back-flow of the water works.

Ideally, no one should live near the water catchment area so as not to disturb the trees and the water table. The nearest household, if any, should be 4 kilometres (km) plus away from the water works and should be about 200 km from the substations. However this is not the case in Kalulu as certain households are within a 3 meter radius from the substation and farms are located just 2 meters away from the catchment area.

The utility company does not currently run any sensitization program but is in the process of developing one. A team of experts from various fields that are part of this organization have been assigned this task. The main essence of this program will be to bring about awareness of the threat that their activities cause for Kalulu through education. The team intends to use group discussions and one-to-one communication in achieving this task. The team seeks to have community sensitization environment meetings that focus on conservation once a week from the 1st week of January, 2012. Sensitization through education will help the people to understand how encroachment affects the environment in Kalulu. Monitoring of these projects will be continuous. However, during the pilot testing of this sensitization program, most of the squatters seemed unwilling to participate in this program. However, the researcher observed that the sensitization program did not take into account the values of participation, the value of local knowledge and the socio-economic scenario that forms these people. Cultural aspects and societal relations as well as the opinion leaders who play role in the adoption or rejection of programs, have also been largely ignored.

There are many reasons why well-driven and advantageous programs are often rejected by the end users. Everett Rogers 1962 states that there five (5) stages through which an individual must go through before they can accept or reject an innovation. These are:

- Knowledge; in this stage the idea is first exposed to an innovation but lacks information about it and is not so eager to get more information about it.
- Persuasion; at this stage the individual is interested in the innovation and seeks more information and detail concerning it.
- Decision; during this stage the individual weighs the concept of the innovation by looking at its advantages and disadvantages. They take into account as to whether or not the innovation will be mutually beneficial to them and those close to them. During this stage the individual chooses as to whether or not to adopt or reject the innovation. If the individual chooses to reject the innovation for whatever various reasons, then the process ends here but if on the other

hand they chose to adopt it then they move onto the next stage. Rogers states that due to the individualistic nature of this stage, it is the most difficult to acquire empirical evidence (*Rogers 1964: 83*)

- Implementation; at this stage the individual determines the usefulness of the innovation and may search for further information about it.
- Confirmation; during this stage the individual makes the decision to continue using the innovation and make it part of their lives.

It is important to note that the mode of communication and the manner in which programs that initiate and spearhead an innovation are delivered is very important. During the stage of decision making, the factors of communication and their manner of delivery matter in the final outcome. Taking this into account, Lukanga Water and Sewerage must ensure that the methods they use in the group discussions allow for full participation and so as for communication for development to take root.

5.4.5 Zambia Network of Environmental Education Practitioners (ZANEED)

ZANEED encompasses educators teach environmental conservation in schools. It also encompasses various stakeholders who have a key interest in the environment. ZANEED tries to lobby for environmental awareness in schools and in the community. Unfortunately, ZANEED has not been very active in tackling issues relating to bring about education and awareness to squatters of forest reserves as this is a situation that has been highly ignored. Nevertheless, ZANEED is in the process of creating an environmental awareness plan.

The researcher spoke to the Secretary General of ZANEED in Kabwe who stated that the first step in bringing about environmental awareness and collaborating with the squatters in Kalulu was to carry out a 'Needs Assessment'.

The people of Kalulu do not have an income and so they have resorted to charcoal production and clearing land for agriculture to grow crops for sale, as an alternative measure. Thus part of ZANEED's program will be to try and find out what alternative sources of income can be encouraged and generated in Kalulu.

5.4.6 Food Reserve Agency (FRA)

FRA is an organization set up by an act of parliament to hold strategic food reserves in the country. The main product bought by FRA is white maize. FRA buys a standard 50 kilo gram (kg) bag at K65, 000. Nevertheless, cassava is also bought especially in

Luapula and Northern Province whilst rice is bought mainly from western Province. The other essence of FRA is to try and empower the small scale farmer.

The researcher spoke to the Depot Manager from FRA situated in the forest. The Depot Manager stated that the Makupu depot was set up in 2008 in order to buy maize from farmers who produced more than 10 bags of maize in order to assist them gain an income. FRA also supports these farmers under the Fertilizer Input Support Program (FISP).

Farmers who belong to cooperatives find easier access to sale there maize to FRA. Thus, farmers are encouraged to either belong to a cooperative or a union and FRA will buy there maize so long as it is of standard quality.

FRA is aware that Kalulu is a national forest reserve but set up the depot in spite of this knowledge to support the squatters.

The researcher observed that the setting up of this depot has encouraged the squatters to farm more vigorously. In the 2009/2010 harvest the squatters of Kalulu hugely contributed to food security by selling a total of 90, 550 by 50 kg bags of maize.



Fig XIV: MAIZE STORED AT FRA MAKUPU DEPOT IN KALULU FOREST

5.4.7 Ministry of Community Development (MoCD)

The MoCD is very important as it is mainly focused on the well being all people especially vulnerable groups such as women and children and ensuring that these groups have access to social amenities. It focuses on empowerment, human rights, education, gender based issues, children's rights and social-economic development at community and national level.

The researcher spoke to an official from MOCD whose main area of focus is Kalulu forest. The official explained that the MoCD has three major programs under Gender and Development running in Kalulu. These are:

- Women and Development
- Self Help Initiative
- Poverty reduction Programs

In Kalulu about 30 different women's groups benefit from the Gender and Development program. For instance the Makolela Gender Support group received a hammer mill in 2006 and from this the women managed to further generate incomes earned and buy chickens and cattle for the club. Other women managed to acquire land from the headman without interferences from their spouses.

The MoCD is and does work with the FD but there seems to be a conflict of interest as the FD is mainly interested with the forest whilst the MoCD is interested in the well-being of the squatters as they are viewed upon as vulnerable people who have nowhere to go. The MoCD has suggested that they in conjunction with the FD come up with a deliberate policy to save Kalulu without necessarily displacing the squatters.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.0 CONCLUSION

Community participation in issues of forest management in Kalulu is generally unimpressive. The relationship between the FD and the community is one of mistrust and scrutiny and this has led to downward spiral in development. However, the potential to regenerate Kalulu Forest is one that can be achieved as long as all stakeholders involved reach a consensus which enables them to fully participate in this activity without intimidation and whilst having access to all the relevant information. This can also be done by establishing effective participatory communication strategies through which all ideals can be acknowledged and implemented.

In order to provide holistic sustainable development in this regard, there is need to address the current legislation and come up with policies, such as PFM, that are compatible with the current scenario and take into account socio-economic trends. There is also an urgent need for the FD to build trust with the community who see them merely as guardians of the forest and not as partners in development. The FD must further respect and acknowledge that local people can help to spear head their own development as they are endowed with experience and facts about their community and its environment. In turn, the squatters of Kalulu should be willing and keep an open mind in order to learn the importance of Kalulu forest as a water catchment area so as to be able to save and regenerate the forest.

Since forests play a major role in sustaining national development effort, it is only logical that its planning be considered as a long term investment. Ideals in this regard should go beyond tree planting which occurs vigorously in only a few parts of the country. Forests are not just a source of energy in terms of fire wood and charcoal but forests are also a source of medicine, contribute to food security by providing various fruits, honey, mushrooms, caterpillars and so on. Forests contribute to industry, protect the environment from degradation, act as a habitat for animals, play a vital role in the rain cycle and act as a carbon sink for water sources by preventing rapid evaporation. Forests are therefore a great source of environmental sustainable development.

If we cast a long term positive vision for the squatters of Kalulu and Kalulu forest in itself, then the inevitable answer is that the whole community should actively participate in establishing effective policies and practices that will bring about positive

social change which will enable them to live in harmony with the environment. In doing so, the squatters will no longer be under threat of eviction nor will the forest be further depleted but will be saved and continue to perform its purpose and protect the water catchment area.

Alternatives for fuel wood that are cheap, easy to access and adapt should be developed. This will not only reduce the rate of deforestation in Kalulu and other forest based communities but it will serve as a solution for urban users who have turned to the use of charcoal due to an increase in electricity tariffs. Farming methods that contribute to both household and national food security and do not damage the environment due to the use of chemicals and certain fertilizer should also be introduced whilst taking into account the squatters perceptions and knowledge.

6.1 RECOMMENDATIONS

Currently the community of Kalulu forest is not engaged in any form of sustainable participatory forest management activity with the FD or any other stakeholders. This is mainly because the FD works within the confines of law which explicitly states that no squatters should be in the forest and so to them, engaging in any forest management program would not only be a way of further encouraging the squatters to live in the forest but would also be an act unauthorized by statutory law. However, both the FD, opinion leaders of Kalulu and the majority of the squatters within the forest are willing to engage in any activity that will involve all stakeholders in order to save the forest. It is recommended therefore that:

6.1.1 Creation of a New Forest Act

Parliament should pass a new legislation that will change the face of forestry in Zambia especially in encroached forest reserves so as to allow both the FD and various stakeholders involved to come up with policies that will foster sustainable forest development and bring about equity in incomes gained. The 1973 Forest Act is clearly outdated and cannot be applicable in current and emerging issues of forestry and this makes it almost impossible for the FD to tackle issues of deforestation.

The new legislation should be able to support various policy and programs such as SFM, JFM, PFM and CBFM. The cost benefit sharing should be made explicitly clear so as to avoid confusion. Although it is true that JFM has been implemented as a forestry

program, it has failed to take full roots as it is not fully supported by legislation nor has its cost benefit sharing been worked out.

6.1.2 Consensus by all Stakeholders

In order to save Kalulu Forest there needs to be a consensus by all stakeholders involved. Although Kalulu is a forest reserve, other government agencies such as agriculture has been empowering the squatters with new farming methods and FRA has set up a depot house and buys maize from the squatters. The Ministry of Community Development, further states that it is illegal and a violation of human rights to *displace a person or persons who have been living in a certain place over a period of time without finding them proper alternative accommodation*. During elections, the Electoral Commission of Zambia (ECZ) sets up polling stations within Kalulu forest so as to allow people to vote. This makes the work of the FD very difficult. However, if all stakeholders had to begin by first understanding the importance of Kalulu as a forest reserve and role it plays in the water cycle as well as the protection of the underground water fields, it would serve as the basis and the beginning of mutual understanding and cooperation.

All stakeholders have their various interests in Kalulu but in order to save this forest, future effects should also be taken into consideration so as to come up with plausible solutions.

6.1.3 Introduce Agro forestry

Agro forestry is the practice of allowing trees and crops to grow together on farmland or in the forest. There are over 670 tree species that are used in this regard. Due to the complexity of Kalulu as an area that has almost been turned into a “farming block”, agro forestry can assist in sustaining the forest while the squatters practice sustainable agriculture which helps the soil to retain its nutrients.

Introduction of an on-going forest a forestation program would also be of great advantage to the area.

6.1.4 Reinstate the Coupe System

The re-introduction of the coupe system in Kalulu will help to regenerate the forest. Once an agro forestry policy is implemented, the coupe system should then be reinstated.

6.1.5 Participatory Communication

Communication underpins development and so logically speaking, were there is no communication, development and implementation of new ideas is slow and in certain instances almost nonexistent. Due to the complexity nature of Kalulu, the form of communication with the most potential to instil social change is that of participatory communication. This can be done by ensuring that the squatters come on as participants and help in identifying and coming up with solutions to deforestation.

The squatters can develop a *Community Action Plan Against Deforestation (CAPAD)* that will assist them in creating a conservation objective were they can discuss, plan and underline the;

- *threat of deforestation in Kalulu*
- *causes of deforestation in Kalulu.*
- *ways to reduce deforestation*
- *activities that can be put in place by different sets of the community in trying to regenerate the forest*

The FD should educate the locals on the benefits of conservation and sustainable practices such as DBH. However, the FD must not make the mistake of ignoring local knowledge as this form of fragmented approach to communication for development can bring about confusion, poor decision-making and lead to missed opportunities.

The Bottom-Up approach must be fully exploited, empowering people to speak for themselves and participate in environmental processes.

6.1.6 Use of Focus Group Discussion

The FD should use FGDs as a way of communicating and exchanging ideals based on forestry management. FGDs also act as a platform for people to express themselves and learn collectively.

The people of Kalulu are willing to engage in any environmental projects to help save Kalulu as they know that they have nowhere else to go. The FD should take advantage of this willingness to engage and educate the community.

6.1.7 Use of Interpersonal Communication

The researcher established that although interpersonal communication is used, messages are usually tailored in a negative manner and are almost always one-sided.

Interpersonal, face-to-face communication should be used in a positive way that allows both parties involved to participate verbally freely and fully. During this discussion, other forms of media such as pamphlets and brochures can also be employed.

6.1.8 Setting Up of a Community Radio Station

The technocrats from the FD cited radio as one of the most uncommon channels of delivering messages in Kalulu even though, as a media, it can be very effective in *informing and getting people to think and act.*

In spite of there being no electricity in Kalulu, the squatters use batteries to listen to the radio. Most the radio stations do not have network and so squatters often tune in to Radio One station programs.

Community radio is a very successful way of reaching people in the community and addressing various issues that affect the community. The setting up of a community radio station for the squatters of Kalulu would not only be effective in addressing issues of deforestation but also health, agriculture, water and education. A community radio station would also act as a platform for opinion leaders in the community to address and inform the people on current programs, projects and meetings, rather than having to go from door-to door as is the current trend. It would also enable *personnel from the FD to be able to communicate and deliver messages and programs of an environmental nature to the squatters.*

6.1.9 Re-packaging of the Innovation of Anti - Deforestation

In spite of the FD having told the squatters not to cut down trees, this trend has so far continued. This is not because the message has not been heard but because as an innovation for fostering anti-deforestation, it is not applicable to the socio-economic scenario of the squatters. In Kalulu deforestation campaigns are viewed even more negatively because messages seem to be tailored in a manner that solely advocates for the people to leave the forest.

The FD thus needs to urgently get back to the drawing board and come up with a deforestation awareness campaign that is compatible with current socio-economic trends and cannot be easily rejected as it will also offer solutions in alternative energy sources which are cheap, easy to access and adapt, such as the use of the clay stove for cooking. Further, the campaign must be socially and culturally acceptable.

6.1.10 Restructuring of the Forestry Department (FD)

The MTENR needs to take an in-depth analysis of the structure of the FD and reinstate cardinal positions such as the Forest Guard. Adopting strategies such as the coupe system and agro forestry will be a far cry from success if important positions such as the forest guard are not re-implemented. Further, a more flexible structure should be created at the top to help with easier implementation of projects.

The MTENR should also consider decentralization of the FD. This will enable management decisions to incorporate the squatters of Kalulu's local Knowledge about deforestation. Additionally, the locals may feel a sense of ownership of rules regarding forest use and thus feel more compelled to abide by them.

6.1.11 Motivating FD Staff Workers

The government through the MTENR should work at motivating workers at the FD through improved working conditions. The current working conditions have given rise to low motivation. During the research, workers called for more funding, better transport services, better wages and paid leave.

Another cause of demoralization at the FD is the constant interference by senior government officials inclusive of those who may not be directly in-charge of their ministry.

6.1.12 Staff Should Undergo Training in Communication for Development

Although a fairly new trend in Zambia, communication for development has proven to be effective in fostering sustainable development. Training in forms of workshops and seminars of forest staff in this discipline can help them achieve success by implementing projects that are not only sustainable but people driven. It will also help staff to take into account social, economic and cultural, beliefs and norms of a people

6.1.13 Zambia Electrical Supply Co-operation (ZESCO) Should Find Ways Reduce Tariffs

From the research it was discovered that most of the charcoal produced within Kalulu is for the urban populous who have resorted to the use of charcoal due to the increase in electricity tariffs. In Kabwe, the rate of unemployment is extremely high due to the closure of the mines, the railways and other relevant parastatals. People have thus turned to charcoal as a means of energy for cooking, heating water for bathing and body heating in the cold and rainy seasons.

The high frequency of electricity load-shedding by ZESCO has also forced both people who can and cannot afford to pay for electricity to turn to charcoal as a solution.

This forms a huge challenge for the FD as the problems within the forest are multi-sectoral that is to say; a lot of factors have to be taken into consideration if the message of anti-deforestation practices is to be successfully implemented in both communities and individual households.

6.1.14 Incorporation of the Squatters in Delivering Messages in Deforestation through Drama

Drama is an effective and powerful tool in bringing about behaviour and social change. The FD should try and incorporate the local people into various forms of drama such as plays, poems and songs that advocate for environmental sustainability.

Involving the squatters in the production and dissemination of such drama shows will stir a sense of belonging in both the actors and the viewers. Drama productions should be staged at community agriculture clubs, women's clubs and market areas. They should depict the dangers of deforestation whilst highlighting its effects on the water catchment area. Environmental sustainable solutions and the process of adapting these new innovations should also be shown so as to allow the squatters to understand the importance of their environment.

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APPENDICES

APPENDIX ONE (1)

QUESTIONNAIRE FOR KALULU FOREST SQUATTERS

SECTION A

PERSONAL INFORMATION

1) Sex

1= Male 2=Female

2) Age

1= 15 – 25

2= 26 - 35

3= 36 – 45

4= 46 – 55

5= 56 AND ABOVE

3) Marital Status

1= Single

2= Married

3= Widowed

4= Divorced

5= Separated

4) Educational Level

1= No Formal Education

2= Grades 1 – 7

3= Grades 8 – 9

4= Grades 10 – 12

5= College and University Level

SECTION B

SOURCE OF COMMUNICATION AND INFORMATION

5) Do you have a cell phone?

1= Yes 2= No

6) Do you own a radio?

1= Yes 2= No

7) Do you own a television?

1= Yes 2= No

8) Do you have access to a newspaper?

1= Yes 2= No

9) Do you have a computer?

1= Yes 2= No

10) Which form of mass media do you often use? (Tick in boxes below)

MEDIA	1.REGULARLY USED	2.SOMETIMES USED	3.RARELY USED	4.NEVER USED
11) NEWSPAPER				
12) RADIO				
13) TELEVISION				
14) COMPUTER				

15) What are the major factors influencing your choice of media? (Briefly Explain)

SECTION C

LIVELIHOOD IN KALULU FOREST

14) How long have you been living in Kalulu Forest?

1= 1 – 4 Years

2= 5 – 8 Years

3= 9 – 12 Years

4= 12 Years and Beyond

15) Where did you live before you came to Kalulu?

16) Were you in formal employment?

1= Yes 2= No

17) If yes, what made you leave formal employment?

1= Retirement

2= Retrenchment

3= None Renewal of Contract

4= (Other Specify) _____

18) Why did you decide to come and settle in Kalulu Forest?

19) Do you know that Kalulu Forest is a protected Forest Reserve?

1= Yes 2= No

20) Do you cut trees?

1= Yes 2= No

21) Do you use trees?

1= Yes 2= No

22) If yes, what do you use trees for?

1= Charcoal Production

2= Sale of Timber

3= Firewood

4= Making Houses

5= All the Above

6= Other (Specify) _____

23) Do you clear land in order to grow crops?

1= Yes

2= No

24) If yes, what crops do you grow?

25) Do you use fertilizer for your crops?

1= Yes

2= No

26) If yes, what fertilizer do you use?

27) Do you sale these crops?

1= Yes

2= No

28) If Yes, to whom do you sale these crops?

1= Local Community

2= Food Reserve Agency (FRA)

3= Residence of Kabwe

4= Residence outside Kabwe

5= Various Government Agencies

6= All of the Above

7= Other (Specify) _____

29) Do you produce Charcoal?

1= Yes

2= No

30) Do you have a License?

1= Yes

2= No

31) If Not, why?

1= It is expensive

2= Have no idea where to obtain a License

3= Did not know that I needed a License

4= Other (Specify) _____

32) Do you Sale Your Charcoal?

1= Yes

2= No

33) Where do you sale most of your Charcoal?

1= Local Community

2= Residence of Kabwe

3= Residence outside Kabwe

4= Large Scale Exporters

5= Other (Specify) _____

SECTION D

KNOWLEDGE ON DEFORESTATION

34) In your opinion, do you think that there is deforestation in your community?

1= Yes 2= No

35) If yes, what do you think are some of the negative consequences of deforestation?

36) Do you know about the Forestry Department?

1= Yes 2= No

37) If yes, what do you know about it?

38) Do officers from the Forestry Department ever come in person to educate you on the benefits of Forest Conservation?

1= Yes 2= No

39) If yes, how often do they come to Kalulu?

- 1= Once to Twice a year
- 2= Three to Four Times a year
- 3= Four to Five Times a year
- 4= More than Five Times a year
- 5= Never

45) If your answer to Question 42 is No, why?

46) Are you aware of any Deforestation Awareness Campaigns that have been carried out?

1= Yes

2= No

47) If yes, how did you know about the Campaign?

1= Radio

2= Television

3= Newspaper

4= Friends

5= Other (Specify) _____

48) Have you ever participated in any Deforestation Campaign?

1= Yes

2= No

49) If yes, what was the benefit of your participation?

50) Are you aware that Kalulu Forest is a Water Catchment Area which provides household water to the residence of Kabwe?

1= Yes

2= No

51) Are you aware that the cutting down of trees lowers the level of water in this area?

1= Yes

2= No

52) Are you aware that the use of fertilizer contaminates the water?

1= Yes

2= No

53) Would you be willing to work with the Forestry Department and other stakeholders to try and conserve Kalulu?

1= Yes 2= No

54) If Yes, how would you want this partnership to exist?

1= The community comes up with Rules and Regulations of how to protect the forest with the Forestry Department acting only as a facilitator

2= The community comes up with Environmental Solutions guided by the Forestry Department

3= The Forestry Department implements policies and ideas of which the community must follow

4= Other (Specify)_____

55) If the answer to *Question 53* in No, briefly explain why?

56) Would you be willing to move from Kalulu Forest if the Government found you alternative land?

1= Yes 2= No

57) If Yes, why?

58) If Not, why?

APPENDIX TWO (2)

QUESTIONNAIRE FOR FOREST DEPARTMENT STAFF

SECTION A

PERSONAL INFORMATION

1) Sex

1=Male

2=Female

2) Which religious affiliation do you belong to?

1= Christian (CATHOLIC)

2= Christian (PROTESTANT)

3= Hindu

4= Muslim

5= Buddhist

6= Other (Specify)

3) In which area density do you reside?

1= Low Density

2= Medium Density

3= High Density

4) What academic qualifications do you possess?

5) How long have you been working for the Forestry Department?

1= Less than Two years

2=2-5Years

3= 6-10 Years

4= Above 10 Years

SECTION B

FOREST STAFF AND GENERAL COMMUNICATION

6) Do you have any specific qualification in Forestry?

1= Yes

2= No

7) Do you have any specific qualification in Communication?

1= Yes

2= No

8) Do you think that training in Forestry has helped you to communicate with persons practicing deforestation?

1= Yes

2= No

9) If yes, how has it helped you?

1= I am better able to give out information on deforestation

2= I am better able to discuss environmental problems with different socio-economic groups in both English and the local language

3= I am better able to tailor messages for specific groups

4= Other (Specify) _____

10) If the answer to *Question 8* is No, then why?

1= There is no time to communicate with people practicing deforestation

2= There is no plan for communication on deforestation especially in Forest Reserves

3= The people most in need of this communication are not easy to approach

4= Other (Specify) _____

SECTION C

COMMUNICATION FOR KALULU FOREST RESERVE

11) Does your organization give out information to the community in Kalulu on the importance of having a Forest Reserve?

1=Yes

2=No

12) Does your organization give out information to the squatters on the importance of Kalulu as a water catchment area?

1=Yes

2=No

13) If Yes, do you have any Communication Strategies in place that have been used to educate people on the dangers of contaminating this water?

1=Yes

2=No

14) Do you have any Communication Strategies in place that are being used to show the people the relationship between the forest and the water catchment area?

1= Yes

2= No

15) If Yes, Specify?

16) If Not, Why?

17) Does your department have any Communication Strategies or Campaigns that give out information to the community in Kalulu on the dangers of deforestation and the importance of a forestation?

1=Yes 2=No

18) If Yes, what are the media used? (TICK IN THE BOXES BELOW)

MEDIUM	1.REGULARLY USED	2.SOMETIMES USED	3.NOT USED
19.POSTERS, PAMPHLETS/BROCHURES			
20. RADIO			
21. TELEVISION			
22. INTERPERSONAL/PARTICIPATORY COMMUNICATION			
23. COMPUTERS			
24.MAGAZINES AND NEWSPAPERS			

25) If the answer to Question 17 is No, What are the major constraints?

- 1= Lack of funding
- 2=Lack of trained manpower
- 3= No communication strategies have been formulated
- 4= Bureaucratic Constraint
- 5= All of the above
- 6= Other (Specify)_____

26) At what stage of State Forests being encroached does your organization intervene?

1=One – Three Months

2= Four –Six Months

3= Six Months and Beyond

4= Other (Specify) _____

SECTION D

NECESSITIES

27) What are the people of Kalulu's most pressing needs?

1= Medical

2= Physical (Food, Clothing)

3= Information

4= Land (for Cultivation, Settlement, Charcoal Production)

28) What are the most pressing needs for you to perform and carry out your duties better?

1= Physical (Funding, Personal Wages, Transport)

2= Additional manpower (Forest Guards)

3= A new law on forests enacted by Parliament

4= All of the Above

5= Other (Specify) _____

29) How do you communicate with your superiors?

1= Meetings

2= Letters

3= Visits

4= No Communication

5= Other (Specify) _____

30) Are most of your needs satisfied through the method of communication chosen in Question 25?

1= Yes

2=No

31) If not, what can be done to improve this?

1= More meetings

2= More visits from Superiors

3= Lessening the Bureaucracy

4=Other(Specify) _____

APPENDIX THREE (3)

GUIDE FOR FORESTRY DEPARTMENT STAFF IN-DEPTH INTERVIEW

1. HAS THERE BEEN A STUDY CARRIED OUT BY YOUR ORGANISATION TO ESTABLISH THE LEVEL AT WHICH PEOPLE IN KALULU ARE PRACTISING DEFORESTATION?
2. IF YES, WHAT WERE THE FINDINGS?
3. IF NOT, WHY?
4. DOES YOUR ORGANISATION HAVE A NATIONAL STRATEGIC PLAN?
5. DOES YOUR ORGANISATION HAVE A STRATEGIC PLAN MEANT SPECIFICALLY FOR THE FORESTRY DEPARTMENT?

6. IF YES, WHAT ARE THE MAIN GUIDE LINES OF THIS PLAN?
7. IF NOT, HAS YOUR ORGANISATION EVER FORMULATED A STRATEGIC PLAN IN THE PAST?
8. HAS YOUR ORGANISATION EVER FORMULATED A COMMUNICATION STRATEGIC PLAN AT NATIONAL, PROVINCIAL AND DISTRICT LEVEL?
9. IF YES, WHAT WAS THE MAIN AIM OF THIS COMMUNICATION STRATEGIC PLAN?
10. WHAT WAS THE RESPONSE TO THE PLAN LIKE?
11. IF NOT, WHY?
12. DOES YOUR ORGANISATION HAVE ANY FUTURE PLANS OF IMPLEMENTING A COMMUNICATION STRATEGIC PLAN?
13. HAS YOUR ORGANISATION CARRIED OUT ANY INFORMATION AND AWARENESS CAMPAIGNS ON THE DANGERS AND ADVERSE EFFECTS OF DEFORESTATION?
14. IF YES, WHAT MEDIA WAS USED?
15. WERE THE MESSAGES DELIVERED IN ENGLISH OR THE LOCAL LANGUAGE?
16. HOW LONG DID THE CAMPAIGN RUN FOR?
17. WHAT WAS THE RESPONSE LIKE?
18. DO YOU THINK THAT THIS FORM OF CAMPAIGN WITH THE USE OF THIS MEDIA HELPS TO ADDRESS THE PROBLEM?
19. IF YES, WHY?
20. IF NOT, WHY?
21. DO YOU HAVE ANY LOCATION SPECIFIC ENVIRONMENTAL SOLUTIONS AIMED AT REDUCING DEFORESTATION IN KALULUFOREST RESERVE?
22. IF YES, WHAT ARE THEY?
23. IF NOT, WHAT LOCATION SPECIFIC RECOMMENDATIONS WOULD YOU GIVE?

24. WHAT FORM OF MEDIA DO YOU THINK WOULD BE MOST SUITABLE TO ENSURE THAT THESE RECOMMENDATIONS ARE MOST EFFECTIVE?
25. WHO ARE YOUR PARTNERS?
26. HOW DO YOU COMMUNICATE WITH YOUR PARTNERS?
27. IN YOUR OPINION IS THERE ENOUGH COMMUNICATION BETWEEN YOUR ORGANISATION AND YOUR PART NERS?
28. WHAT ARE SOME OF THE CURRENT POLICIES ON FORESTRY?
29. DO THESE POLICIES ENABLE YOU TO CARRY OUT YOUR FUNCTIONS BETTER?
30. HAS YOUR ORGANISATION CARRIED OUT ANY COMMUNICATION PROGRAMMES SPECIFICALLY AIMED AT EDUCATING PEOPLE ON THE IMPORTANCE OF ATTAINING MILLENNIUM DEVELOPMENT GOAL NUMBER SEVEN (7) WHICH LOOKS AT ENVIRONMENTAL SUSTAINABILITY?
31. IF YES, HOW SUCCESSFUL WERE THE PROGRAMMES?
32. HOW WERE THE PROGRAMMES CARRIED OUT?
33. WHAT MEDIA WAS USED?
34. IF NOT, WHY?
35. DO YOU HAVE ANY FUTURE PLANS OF IMPLEMENTING SUCH PROGRAMMES?
36. WOULD YOU BE WILLING TO ENGAGE THE PEOPLE OF KALULU AS PARTNERS IN ANY FOREST CONSERVATION PROJECTS THAT YOUR ORGANISATION MAY HAVE?
37. IF YES, WHY?
38. WOULD YOU WANT THEM TO BE THE DRIVERS OF THE PROJECT AND YOUR ORGANISATION TO ACT AS THE FACILITATOR OR VICE VERSA?
39. HOW EFFECTIVE DO YOU THINK THIS PARTNERSHIP WOULD BE?
40. IF NOT, WHY?
41. IN YOUR OPINION WHAT DO YOU THINK WOULD THE BEST APPROACH IN ADDRESSING ISSUES OF DEFORESTATION IN THE COMMUNITY?

42. WHAT ARE YOUR ORGANISATIONS FUTURE PLANS IN TERMS OF COMMUNICATION FOR DEFORESTATION IN KALULU FOREST RESERVE?

APPENDIX FOUR (4)

IN-DEPTH INTERVIEW FOR PARTNERS OF THE FORESTRY DEPARTMENT

1. WHAT ARE YOUR ORGANISATIONS MAJOR AREAS OF OPERATION?
2. WHO ARE YOUR PARTNERS?
3. WHAT PARTNERSHIP PROGRAMMES DO YOU SPECIFICALLY HAVE WITH THE FORESTRY DEPARTMENT?
4. WHAT ARE THE OBJECTIVES OF RUNNING THESE PROGRAMMES?
5. HOW ARE THE PROGRAMMES PLANNED AND MANAGED?
6. DO THE PROGRAMMES TAKE INTO ACCOUNT AN ACTIVE COMMUNICATION STRATEGY?
7. IF YES, WHAT DOES THE COMMUNICATION STRATEGY ENTAIL?
8. IS IT EFFECTIVE?
9. IF NOT, WHY?
10. IS YOUR ORGANISATION AWARE OF ANY ACTIVITIES OF DEFORESTATION IN KALULU RESERVE FOREST?
11. IF YES, IS YOUR ORGANISATION DIRECTLY AFFECTED BY THESE ACTIVITIES?
12. IF SO, HOW?
13. DOES YOUR ORGANISATION HAVE ANY INFORMATIVE AND EDUCATIVE COMMUNICATION STRATEGIES OR CAMPAIGNS IN PLACE TO TRY CURB THIS?

14. IF YES, WHAT DO THEY ENTAIL?
15. WHAT MEDIA IS AND HAS BEEN USED?
16. WHAT AS BEEN THE RESPONSE?
17. IF NOT, ARE THERE PLANS TO HAVE A COMMUNICATION CAMPAIGN IN FUTURE?
18. IF YES, DO THE PLANS INCLUDE THE INPUT OF YOUR PARTNERS?
19. IF NOT, WHY?
20. IN YOUR OPINION, WHAT DO YOU THINK WOULD BE THE BEST WAY TO CONSERVE THIS FOREST?
21. HOW BEST DO YOU THINK SUCH A RECOMMENDATION WOULD BE COMMUNICATED TO THE COMMUNITY OF KALULU?
22. WOULD YOU BE WILLING TO WORK IN PARTNERSHIP WITH THE PEOPLE OF KALULU ON A FOREST CONSERVATION PROJECT?

APPENDIX FIVE (5)

GUIDE FOR FOCUS GROUP DISCUSSION

Type of Group:

Name of Attendees:

Date of interview/discussion:

Start Time:

End Time:

SECTION A

1. Where did most of the people living in your community come from and why did they come here?
2. Has the number of people in each village been noted?
3. (a) How do most of the people in Kalulu earn a living? (If they answer agriculture then let them talk about crops and whom they sale to, ask about FRA and how far the depot is from Kalulu and if only people from Kalulu take crops there). (b) Do people who do not live in Kalulu come to farm there?)
4. Apart from Urea and Compound D, are there any other forms of fertilizer that you use (traditional fertilizers)?
5. Are the returns of this sufficient enough for them to survive?
6. Do the people of your community use the forest for other means such as caterpillar harvesting, collecting mushrooms, and bee keeping and so on?
7. Do have any clubs in your community?
8. If so, what do these clubs do?
9. Do you have access to a community radio station?
10. Do you have easy access to schools?
11. Is transport especially to and from town easily available?

12. Do you have access to health centres in your community?
13. Do you have access to safe drinking water?
14. Do you have electricity in this area?
15. What would you say are the advantages and disadvantages of living in this area?

SECTION B

16. Being a government forest reserve, do you have any programmes that entail forest/environmental conservation?
17. Are you aware of any conservation programs that the forestry department has concerning deforestation in Kalulu? (a forestation, diameter breast height)
18. Have you ever heard of the Joint Forestry Management Program? (If not explain)
19. Would you like to have a JFM or something of its sort in Kalulu?
20. What communication strategies do you use to best communicate with your subjects on various community and even national based issues?
21. What communication strategies do you use to best communicate the needs of your people to various stakeholders?
22. Are there any specific skills that you would want your subjects to learn from the forestry department in order to survive?

SECTION C

23. The Government has stated Kalulu forest cannot be de-gazette as it is i) a forest reserve ii) a water catchment area which provides water to various parts of Kabwe. So if alternative land were to be found for you, would you be willing to move your subjects to this new area?

24. Do any senior government officials ever come to Kalulu to talk to you and hear about your concerns?

25. What message would you give to government officials concerning Kalulu?

~~SECRET~~

THE FORESTS ACT, 1973

OBJECTS AND REASONS

The objects of this Bill are—

- (a) to repeal and replace the Forests Act (Cap. 311); and
- (b) to provide for—
 - (i) the establishment and management of National Forests and Local Forests;
 - (ii) the conservation and protection of forests and trees;
 - (iii) the licensing and sale of forest produce; and
 - (iv) other matters connected with or incidental to the foregoing.

FITZPATRICK CHUULA,
Attorney-General

N.A.B. 41, 1973

3rd August, 1973

PART II

ADMINISTRATION

Ownership
of trees and
forest
produce

3. For avoidance of doubt, it is hereby declared that the ownership of all trees standing on, and all forest produce derived from, the State Lands, Reserves, Trust Lands, National Forests and Local Forests is vested in the President on behalf of the Republic, until lawfully transferred or assigned under this Act or any other written law.

Chief
Conservator
of Forests

4. (1) There shall be a Chief Conservator of Forests, who shall be a public officer and who shall be responsible for the carrying out of the provisions of this Act.

(2) Subject to the provisions of this Act and to the general or special directions of the Minister, the Chief Conservator may delegate any of his functions and duties under this Act to the Deputy Chief Conservator of Forests or to any other forest officer.

Deputy
Chief
Conservator
of Forests

5. There shall be a Deputy Chief Conservator of Forests, who shall be a public officer and who shall exercise such powers and perform such duties as are delegated to him by the Chief Conservator and shall be responsible to the Chief Conservator for the exercise of such functions and duties.

Other
forest
officers

6. (1) There shall be such number of other forest officers (who shall be public officers) as the Minister may determine:

Provided that any person designated or recognised by the Chief Conservator as forest supervisor, forest patrolman, forest watchman or timber checker need not be a public officer.

(2) A forest officer other than the Chief Conservator and Deputy Chief Conservator shall exercise such powers and perform such duties as are conferred or imposed upon him by or under this Act or are assigned to him by the Chief Conservator.

Honorary
forest
officers

7. (1) The Minister may, by statutory instrument, appoint any person to be an honorary forest officer for a period of not exceeding three years, and on the expiry of each such period may, in like manner and for like duration, renew such appointment.

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(2) The Minister may, at any time, by statutory instrument, revoke any appointment or renewed appointment made under subsection (1).

(3) The appointment of an honorary forest officer may be—

(a) general, whereby the honorary forest officer is empowered to act as such in any part of the Republic including any National Forest or Local Forest; or

(b) limited, whereby any honorary forest officer is empowered to act as such in such part of the Republic or in such National Forest, Local Forest or other area as is specified in the instrument of his appointment.

5 (4) Subject to the provisions of this Act and to the terms of the instrument of his appointment, every honorary forest officer shall discharge the functions and perform the duties of a forest officer.

PART III

10

NATIONAL FORESTS

8. Subject to the provisions of section nine, the President may, by statutory instrument, declare any area of land within the Republic to be a National Forest and may in like manner declare that any National Forest or part thereof shall cease to be a National Forest or that the boundaries of any National Forest shall be altered or extended.

Establish-
ment of
National
Forests

9. Where any area proposed to be declared a National Forest under section eight lies within the jurisdiction of a local authority, it shall not be declared to be a National Forest unless the local authority has been consulted:

Consulta-
tion
with local
authority

Provided that such consultation shall not be necessary in the case of any area which was immediately before the commencement of this Act a Forest Reserve or Protected Forest Area under the Forests Act.

Cap. 311

25 10. The President may, by purchase or by compulsory acquisition under the Lands Acquisition Act, acquire any land for the purposes of a National Forest, if he considers it necessary or desirable in the public interest so to do.

Acquisition
of land.
Cap. 296

30 11. (1) The President may, if he is satisfied that rights, easements or profits may reasonably be claimed over any area declared or proposed to be declared a National Forest under section eight, appoint a public officer as a forest settlement officer, or make such other arrangements as he may deem fit, to enquire into and determine the existence, nature and extent of such rights, easements or profits.

Rights in
National
Forests

(2) A forest settlement officer or other person appointed under subsection (1) may, after proper enquiry, either admit in whole or in part, or reject any such claim as is referred to in subsection (1) as seems just to him in the circumstances:

40 Provided that for the purposes of this section the practice of shifting cultivation shall not be deemed to be a right.

(3) Where it appears to a forest settlement officer or other person appointed under subsection (1) that it is expedient or desirable to commute in whole or in part, any right, easement

DIRECTOR OF FORESTRY

