

MOYO DISTRICT STATE OF ENVIRONMENT REPORT 2004

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METHODOLOGY

Successful accomplishment of the tasks in the preparation of DSOERs involved detailed consultation and data collection from/with all the relevant especially the HoD. taken into consideration was the vast knowledge and expertise of those who have been or are involved with environment management related issues at various levels in Uganda and the decentralization process.

In practice, we used questionnaire for data collection and editorial team, including the Planner, did the analysis

Literature Review

A number of documents containing a diversity of information on the past and ongoing activities linked to districts and environment management in Uganda were consulted. Literature on the subject matter of state of environment reporting, was also considered

- *Field Visits.*

Districts departments were visited by the research assistants and sensitized various district officials about the usefulness of district state of environment reporting and explained to them how it works. Their comments were sought and incorporated in the reports in order to enrich the qualitative aspects of the study. these visits enabled the research team to conduct physical and/or on-the-spot assessment of each office and sub county of interest. The research team carried the field visits for 30 days.

- *Training workshops.*

Training of appropriate district organs/officials who would be directly responsible for the production of DSOERs on a sustainable basis was conducted in Arua by. These officials later got involved in the whole exercise.

It started by holding regional meeting with all the DEOs in West Nile and SNV Natural Resources Advisor/West Nile. The meeting defined conceptual approach and identified uniform sources for data collection for West Nile Region. Later, research Assistants were identified and trained on the same by the set task force before the actual data collection exercise.

ACKNOWLEDGEMENTS:

This report, known as the *District State of Environment Report* or DSOER is the second product of the state of the environment reporting process in Moyo District, and will periodically be updated. It was prepared with the support from NEMA.

Special thanks must go to various district officials, especially heads of departments who provided all the data in their respective sectors upon which this report is based. Specifically, the help offered by the CAO, officers in charge of planning in the district is highly appreciated.

Special thanks also go to the data collectors for the work well done.

ACRONYMS

DEO	District Environment Officer
NEMA	National Environment Management Authority
SOE	State Of Environment
CAO	Chief Administrative Officer
SOER	State Of Environment Report
NGO	Non Governmental Organization
PHC	Primary Health Care
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
FAO	Food and Agricultural Organization
SNV	Netherlands Development Organization
LGDP	local Government Development Program
SRS	Self Reliance Strategy

INTRODUCTION

Location and Size

Moyo District is located in north western Uganda bordered by the Republic of the Sudan in the north, Adjumani district in the east and Yumbe District in the west. Physically, the district lies approximately between 3⁰ 30' N and 4⁰ N, Longitudes 31⁰ 31'E and 32⁰ E

The district covers approximately a total area of 2059 Km² and is made up of the counties of West Moyo and Obongi. Obongi lies in the West Nile –Low lands area.

Geology and Soils

Geology

There are three main categories of geological formations in Moyo District (CAP 1994). These include;

- Gneiss
- Alluvial deposits
- Schist, quartzite and marble.

Alluvial deposits and moraines distinguish West Moyo and Obongi. Schist quartzite and marble occur in the mountains surrounding Metu.

Soils

The district soils are generally considered moderately fertile. Many areas cannot be cultivated because they are stony and therefore, thinner while others, which are deeper, get depleted easily. A larger percentage of soil categories present in the district can not sustain intensive exploitation without special care to supplement nutrients and organic matter.

There are five broad categories of soils occurring in the district.

- **Vertisols** which are black / dark clays prone to cracking in the dry season and sticky, muddy and easily water logged during the rains, due to poor internal drainage. If properly managed, these soils are good for cotton growing. They prevail in the areas of Aliba, Itula, and Ejjinga as well as in Lomunga and parts of the Lefori low plains. Another category of vertisols, containing a high sand content, which gives a yellowish color and sandy- loam texture, are common in Lefori, Aluru, and Vura parishes.
- Leptosols, which consists of soils from rocky land. In Moyo, their profile development is practically non-existent, they are stony and reach solid rock within a depth of 30cm. they contain a lot of weather-able nutrients but are too shallow for crop production. Leptosols characterize part of Moyo-Metu.
- Alluvial deposits are soils, which are very rich in organic matter and plant nutrients, very deep, and thus, good for most agricultural production. The areas endowed with alluvial deposits include Dufile, Laropi, Itula, Palorinya and the west bank-along the Nile.

- Ferruginous tropical soils are fairly young and contain weather-able materials. Productive agriculture on these soils requires moderate rainfall. The negative impact of excess or shortages is great. In some areas, ferruginous soils are mixed with complex black clays geographical features. Moyo town is endowed with a good vegetation cover and hilly topography; Obongi lies in the low plans of the Nile Basin. Rainfall in the district as a whole is usually very intense, and its distribution very localized.
- Ferrasols soils demonstrate the most advanced stage of weathering in soils within the district. They have often been exhausted of nutrients and materials with few weatherable remaining. The profile for ferrasol soils is not well defined; although deep, it has lost its good qualities. The texture is predominantly fine and porous with poor water retention. The outward appearance is red coloured or loose and sandy. In general, ferrasols soils are unfertile. They occur mainly in Gimara, and pockets of Itula sub-county.

Climate

Moyo is characterized by strong seasonal variations in rainfall, temperatures and winds. Although there is no up-to-date data on the climate because of breakdown in most infrastructures put in place to collect climatic data all over the district, it is probable that cycles in climatic conditions have affected rainfall and water levels of the Nile. This climatic uncertainty has added to the vulnerability of people's livelihood in the district. This has a result which has far reaching implications for development and natural resource in the district.

Rainfall.

The average yearly rainfall was 1145 mm. Monthly rainfall figures indicate that on average, the district receives less than 100 mm for six months of the year (Agric dept .2004). This year's rainfall has been characterized by a long dry spell.

The variation between stations shows that generally rainfall patterns in the district are quite localized. It is widely felt that rainfall has become more unreliable and variable, both in terms of timing and quantity.

Vegetation.

The vegetation of the district is mainly savanna species. There are also some forests and riparian vegetation and post cultivation communities.

Savanna.

This group includes a wide range of savanna woodland and tree savanna. This is mainly found in some parts of Obongi and more sustainable parts of west Moyo respectively. This mainly includes dry *Combretum-Acacia -Hparrhenia* savanna.

Deciduous savanna woodland and grasses exist in mountainous areas of Moyo and other areas within leptosols.

1.0 CHAPTER ONE

1.1 Environment and Development

1.1.1 Household economy and organization.

The household economy is heavily dependent on agriculture. Agriculture is the main economic activity of about 90% of the people in Moyo district. The sector is dominated by smallholder production mainly oriented toward subsistence and is highly labour intensive. Livestock husbandry complements agriculture in subsistence production, and plays an important role in social and economic systems in the district.

The production unit for agriculture in the district is the nuclear family. Family members work on family fields, but also have the responsibility of cultivating their own fields.

In general, women are the main producers of food for household consumption. Women are responsible for preparing the land after it has been cleared, planting, weeding, and harvesting, transporting, storing and selling small quantities to obtain cash. Men are responsible almost exclusively for clearing land and planting certain crops especially cash crops. Livestock herding is also the work of men particularly boys.

Family labour is often supplemented by hired labour and by reciprocal labour exchanges in the form of groups. Hired labour is often remunerated with food and drinks although cash is also a form of payment, usually, only accessible to more prosperous farmers.

Moyo's economy is essentially natural resource based. That is, the whole of Agricultural sector, (Cash and food crops, livestock, fisheries and forestry) is based on using or harvesting the natural resources.

1.1.2 Sources of income.

Agriculture as noted earlier is the main source of livelihood for the people in Moyo district. The sale of food crops in general is the most important source of income for a majority of households in the District. Simsim is one of the most reliable cash crops grown. Cotton is another type of cash crop in the district although the production level is still low.

A few farmers also obtain cash from the sale of small quantities of livestock.

Table 1.1 Analysis of industries in Moyo District.

S/N	Industry	Category of people engaged	Potential impacts	Threats
01	Local brewing	<ul style="list-style-type: none"> • Rural women • Young girls • Some urban women 	<ul style="list-style-type: none"> • Increased income for the women • Improved access to social services. • Improved standard of living • Improved nutrition due to ability to access variety of food staff. 	<ul style="list-style-type: none"> • Competition • Lack of raw materials. • Incapacity to proper waste management.
02	Cottage industry	Rural men and women	<ul style="list-style-type: none"> • Increased income • Raw materials exploited in a sustainable way. 	<ul style="list-style-type: none"> • Lack of market for the products. • Tendency for over exploitation. • Fire outbreaks.
03	Brick laying	Youth	<ul style="list-style-type: none"> • Improved construction materials. • Income gained. 	<ul style="list-style-type: none"> • Excavated areas potential ground for mosquito breeding. • Land degradation. • Lack of market for the bricks.
04	Black smithing	Rural Men	Improved income	Lack of raw materials.
05	Quarrying	Both men and women.	<ul style="list-style-type: none"> • Improved vocational skills. • Improved income 	Limited to sub counties of Moyo, Metu, Dufile, Lefori and MTC.
06	Fabrication	Men and Youth.	<ul style="list-style-type: none"> • Improved vocational skills. • Improved income 	Limited power (Electricity) and raw materials.
07	Pottery	Rural women	<ul style="list-style-type: none"> • Safe water storage. • Income improved. 	The products are fragile.

The other sources of income come from non-farm activities such as formal employment, crafts and services. Cash is obtained from businesses such as shops and stalls for tracking fish mongering, restaurants and tea-rooms, pottery and bicycle repairs. There is increasing incentive to get involved in the non-farm cash economy because of mounting school fees, reduced earnings from cotton, and the general need to offset the seasonality and uncertainty of agricultural income.

1.2 Tourism industry and mining:

1.2.1 Tourism.

Tourism can be developed and is a potential source of income for Moyo District. Apart from the wildlife areas of Otze and Lomunga animal sanctuaries, Moyo District has a series of hills and peaks and the Nile which are potentially tourist attraction spots.

However, tourism is yet to develop in Moyo District because of a number of factors which are discussed below.

Biodiversity loss.

Excessive loss of biodiversity is one of the reasons tourism is not a significant income earner for the district. The elephant and the black rhinoceros, for example are no more as before. The mountain gorillas are in few numbers since their habitats have been encroached on.

The main pressures behind biodiversity loss include:

- Poaching.
- Wild fires.
- Poor management of wildlife areas.
- Poverty that limits people's attitude to conservation.

These have resulted to some animals and flora to be threatened while others endangered. The loss of biodiversity will also make the competitiveness of the wildlife areas of the district with other areas in the country or in the region to decline.

To stop this, the game department in Moyo District should be strengthened so that poaching, and wild fires would be controlled through by-laws, which stop people from setting bushes on fire during dry season especially near wildlife areas.

Table 1.2 Analysis of Moyo District Resource endowments, Economic Potentials and the Threats.

Facts	Potentials/Opportunities	Threats/ Limitations
- Presence of Sudanese Refugees population in the district	- More resources from out side to support social amenities e.g. schools, health units etc. - They provide market for food and manufactured items - Act as example for local communities in food production	- Scarcity of land (how will people get back their land after the refugees have gone back) - Source of conflict due to scarce resources like land, water and other resources - Environmental degradation - Insecurity
Forest cover (by hard wood)	- Local income from timber and other NTFP. - The district builds stronger partnership with neighboring districts - Presence of rare species could be tourist attraction.	- Un-guided or un-regulated use may lead to soil erosion.
Lime deposits	- Provides income for the local people as they are employed in the exploitation - It widens the district tax base.	- Environmental degradation e.g. due to cutting of trees - Health related problems.
Presence of agricultural land	- Production of enough food crops - Income from sale of produce - There is room for irrigation especially in Metu.	- Use of traditional tools e.g. hand hoes etc - Land tenure system
Presence of River Nile	- Provides fish for food and income - Water transport system - The bank used for horti-culture especially during dry season - Source of hand craft materials - High bio-diversity and acts as tourist attraction - Provides natural barrier to Kony's atrocities.	- Occasional floods damage crops, houses etc - It is a mosquitoes breeding ground - Youths along the Nile leave school for fishing as quick source of income - Threat of HIV/AIDS in the process of buying, drying and marketing of the fish - Hide out for tax defaulters and other criminal elements.
Perennial water sources in Metu sub-county	- Source of safe water - Income for the sub-county - Small irrigation scheme possible - Provides water for brick laying	- Occasional floods damage crops - Not well-maintained gravity flow scheme could be source of diseases.
Wetland areas	- Water reservoirs - Weather modification - Rice farming - Provision of fish (Omvoso) - Provision of craft materials.	- Pose drainage problem especially in road construction - Breeding ground for mosquitoes
Lomunga game reserve area	- Relocation of the "White Rhinos" back from Europe	- Animals become vermin - Displacement of population

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	<ul style="list-style-type: none"> - Act as tourist attraction - Rain catchments area - Rich bio-diversity (attracts researchers) 	<ul style="list-style-type: none"> - Good source for bush fire - Hide out for criminal elements.
All rural parishes have got health unit	<ul style="list-style-type: none"> - Immunization of children - Anti natal care (ANC) - Health education to the community 	<ul style="list-style-type: none"> - Un willingness of staff to stay in remote areas - Lack of equipment and facilities - In sufficient accommodation of staff
At least all the sub-counties have got one Secondary School	<ul style="list-style-type: none"> - Absorption of pupils from universal primary education - Employment opportunities - Influence community attitudes/behavior - Revenue for the district (private schools pay license) 	<ul style="list-style-type: none"> - Difficulties in quality assurance especially in private schools (profit oriented, they lack text books, discipline not controlled) - Ban by the central government on recruitment of secondary school teachers - Employ few teachers especially private schools - Few students thus under utilization of facilities.
Electricity supply	<ul style="list-style-type: none"> - Establishment of small scale industries - Entertainment/leisure industry e.g. video, disco etc - Extends business time - It guarantees security at night. 	<ul style="list-style-type: none"> - Supply in terms of voltage and duration is in adequate - Confined to the town only - Un-reliable supply (old generator).
Historical sites like “Logubu” where slave were kept over night, iron mining, “Drimgbulumgbulu” where there was fierce fighting	<ul style="list-style-type: none"> - Tourist attraction - Educational sites 	<ul style="list-style-type: none"> - Sites not maintained - Location and quantity not well known especially iron mining
Moyo Technical Institute	<ul style="list-style-type: none"> - Provision of technical local artisan less Soddy work - Potential for University for technology - Solve/reduce un employment among the youth 	<ul style="list-style-type: none"> - The capacity limits enrolment - Limited equipment

Source: (Moyo District DDP 2004/05-2006/07.)

Public Amenities.

These are generally not available in the district. Accessibility to and within the district is also difficult.

However, Arra Fishing Lodge, at the boarder between Adjumani and Moyo Districts, is being developed to address the needs of tourists.

The pressures behind this include:

- Poor resource endowment.
- Absence of HEP, which limits development of industries.

The necessary response is to develop tourism through government or private initiatives by first up grading some or one wildlife area in the district to a national park and develop public amenities there.

Insecurity.

Insecurity is one of the reasons progress in tourism development in Moyo District has not developed. Since 1987, access to the district by road has been a risky venture, especially on Gulu-Moyo road, because travelers and potential tourists are always in danger. The insecurity situation is majorly attributed to attacks by the Lord’s Resistance army (LRA).

For this reason, most people get scared to visit Moyo District. The safest way to go to Moyo is by air but not every one can use this because it is expensive.

Military and political actions towards the rebels are apparently the response being undertaken to solve the insecurity problem.

1.2.2 Mining and Industry.

The potential for mineral exploitation has not been thoroughly accessed. There are however, indications that some minerals are present in the Metu hills.

Limestone is being mined and burned for lime in the Metu hills (Arapi Village), 22Km. North East of Moyo Town using open cast method. The industry employs up to 89 workers at the moment. The production covers an area of 6Km². This is done on small-scale using simple technology. The infrastructure supporting the exploitation of lime is very poor, and markets have not been systematically developed. The quality of the lime produced is rough and cannot compete with imported lime for the finishing of buildings. However, the lime can be used in mortar for laying bricks.

Clay deposits are also present in Metu and Obongi, though the quantity of the supply is not known. Crafts people in the fabrication of burnt pots and vessels use Clay.

There are no large industries in Moyo District because it is basically a rural district and also lack of Electricity limits industrial development. Small-scale factories, such as black smithery and the craft workshops form the industries in the district.

The issues involved in this section are further discussed below.

Pollution.

The lime mining in Metu can cause solid, liquid and gaseous waste if on a large scale. The Lime mining Metu and the small-scale factories in the urban areas of the district are likely to pollute the environment. Pollution is usually in the form of wastes produced as one of the by-products or in search of precious stones in the case of mining. Human faeces dropped around mining camps are also a source of pollution.

The main pressures behind pollution include:

- The district lacks national standards guidelines for air, water, effluent, noise and soil quantity upon which to base the monitoring exercises. Most minors and industrialists exploit this situation and continue polluting the environment without hindrances.
- Uncoordinated activities among various sectors/departments which make it difficult to monitor possible sources of pollution.
- Lack of ordinances regarding waste management, pollution control and monitoring measures and inefficient enforcement of the established legislation by NEMA.

The current situation is that where mining is done in the district, the pollution of water and other components of the environment is not monitored.

In an effort to address the above pressures, government, through NEMA has developed environmental standards and impact assessment guidelines to help in environment monitoring. Likewise, coordination among sectors/departments has also improved through Environmental Liaison Units (ELU), which are established in each ministry and or institutions.

Biodiversity loss.

It is mainly mining which could be causing biodiversity loss in the district. In most cases, large areas of vegetation are lost for burning lime and also opening up a mine. In the process, habitats of various fauna get destroyed.

The main causes of biodiversity loss in mining areas could include:

- Bush clearing to open up mining areas so that accessibility becomes easy. This clearing continues as long as it is necessary to do so by the miners.
- Mine camps itself is a stress to biodiversity because of the need for fuel wood for cooking.

The result is that, some fauna and flora get destroyed in the long run. Now that National Environment Impact Assessment (EIA) guidelines are in place, the miners should ensure that EIA is done and see to it that biodiversity loss is reduced.

Site Restoration.

Mining creates pits in the ground and de-vegetates the surrounding areas. Disused pits are never filled up and trees not planted after mining of the area is over. Little, if any is done to restore sites to accessible levels.

Main causes of lack of site restoration by respective mining companies (especially Metu Lime Works) and or individual miners include:

- Inadequate monitoring system to track down culprits and lack of District land use policy.
- Uncontrolled mining activities.
- Obsolete laws and regulations regarding restoration, compensation and or levying charges on the person(s) who waste the land resources.

Lack of restoration of land including replacement of soil, replanting of trees and other flora reduces land usability and stability. Man and animals can fall in the pits and get broken or die.

The National Environment Statute of 1995 gives orders for environment restoration. Section 68 of the statute lays down all the procedures to be followed and empowers NEMA to issue environmental restoration orders. Such orders may be issued for preventing the person from taking any action, directing that person to compensate other persons whose environment has been harmed, levying a charge on that person and or requiring the person to restore the environment as near as it may be to the state in which it was before taking the action.

2.0 CHAPTER TWO

2.1 State of Environment

2.1.1 Land resources.

Unreliable rainfall not only dictates the type of plant grown but also the livelihood of the inhabitants. Most soil categories present in the district cannot sustain intensive exploitation without special care to supplement nutrients and organic matter. The activities of men is threatening the stability of the environment in the district e.g. the burning of bush land and crop residues carried out during the dry season causes soil degradation. Issues linked to land resources in Moyo District are further discussed below.

Ecosystem fragility

Moyo district ecosystems are mostly fragile. It is widely felt that rainfall has become more unpredictable over the last ten years, both in terms of timing and quantity.

The rainfall is seasonal. Two short rainy seasons occur from April to June and from July to October. The dry season extends from November to March. Strong winds which originate in the Satelu- Sudanic zone of Sudan, are a common phenomena throughout this period. Therefore erosion from strong winds and torrential rainfall is common in the district.

As a result of heavily weathered soils, the soils can easily lose their potential for agriculture.

The main causes for ecosystem fragility are as follows;

- Unreliable rainfall
- Poor internal drainage, shallow, young nature of some of the soils in the district as noted in the introductory part.
- Bush burning, overstocking in some areas and increasing need for fuel wood and building materials cause deforestation. Loss of tree cover subsequently lowers soil organic matter in these parts of the district.

The fragility of the ecosystem has important implications on the agricultural activities of the people lowering production while increasing poverty, which is highly associated with environmental degradation.

To correct this trend in the district, it has been recommended that special care to supplement nutrients and organic matter should be undertaken to improve soil quality. Tree planting particularly in the refugee camps and schools could improve on the soils and modify climate in these areas. District council should also pass ordinances to stop bush burning which cause tree and grass cover loss.

2.1.2 Tenure arrangement.

Land in Moyo district is communally owned, and primarily based on small land holdings. In the urban areas of Moyo town council, the land is under leasehold. There is also public land. Over 70% of plots of land in the district are under customary land tenure. The public land used by squatters account for 10.4% of plots. Lease holding, which is the most secure form of tenure in Uganda, is held by less than 30 people in the district (with the exception of plots located within town council).

Ownership of customary land is tied to lineage or clan. Only men can own Land, although all family members can use it. Family members and clan elders administer customary land. The elder sons of all his wives, who share their portion with their other brothers, inherit a man's land. The brothers then own the portions of land allocated to them. Under customary tenure systems, it is possible to lend and borrow land. There is no payment of borrowing land, but the periods of loan are relatively short.

In the main town of Moyo, all land is rented from the town council. Land can also be leased for a periods of 49 to 199 years, a practice which has increased in recent years.

The problems with communal land tenure systems in Moyo District are that land is bound to be over exploited without replacement. This is so because under communal land systems, responsibility to ensure conservation on land is non-existent.

This is mainly caused by;

- Lack of knowledge on carrying capacity.
- Land fragmentation, which results in over-cultivation.
- Overstocking on communal grazing areas.
- Lack of conservation measures such as tree planting, proper agricultural practices to conserve the resources.

Land thus continues to deteriorate affecting food production as well as livestock production.

This problem should be solved through a land reform programme for the district e.g. lease holding which helps in defining rights and obligations to encourage optimal resource utilization as well as conservation. There is no-up-to-date data on this in the district.

2.2 Land use planning

Land in Moyo district is currently being used as shown in table 2.1 below

Table 2.1 land use in Moyo District

Land use	Area Km ²	Percentage (%)
Broad leaved plantation	12.7	0.61
Tropical high Forest (stocked)	52.3	2.54
THF (degraded)	12.6	0.61
Woodland	63.4	3.08
Bush land	550.1	26.72
Papyrus /Reed swamp	196.0	9.52
Small scale subsistence farmland	1051.7	51.08
Large scale uniform farm land	7.0	0.34
Built up area	5.5	0.27
Open water	107.5	5.22
Impediments	0.2	0.01
Total	2059.0	100.0

Source: Moyo DDP 2004/05-2006/07.

The pressure behind the existence of current land use in the district includes:

- Low commodity pricing
- Lack of economic incentives for conservation.
- Land tenure system
- Poor land use
- Lack of extension services on soils conservation.
- Lack of education/training/research on land.

Lack of land use plan affects the efficient utilization of land resources whereas an effective land use plan ensures that land is used for the purposes it is suited.

To address this problem, a land use policy should be implemented to develop a land use plan for the district.

2.2.1 Forests.

This category consists of mainly moist low altitude evergreen trees and also medium altitude mountain trees in Metu area of Moyo. Forests are also found along rivers, rocky hills and inselbergs. But undoubtedly, there is reduction in these forests because they have been a source of all building materials and fuel wood.

Table 2.2 Forest area coverage by category:

S/N	Category	Area (Ha.)	Ownership	Distribution
1	Central Forest Reserve	28,365	National Forestry Authority.	<ul style="list-style-type: none"> • Uneven • Covers 05 sub counties of Metu, Lefori, Moyo, Itula and Dufile.
2	Local Forest Reserve	20.0	District Forestry Services	Covers only sub county of Dufile.
	Community Forest reserve	No upto date data	District Forestry Services	Uneven but covers 60% of total area of Moyo District.
	Private Forest Reserve	44.0	Organizations, individuals or CBOs.	Scattered.

Table 2.3 Central Forest Reserve distributions by Acreage.

S/N	Name of Central Forest Reserve	Area (Ha.)	Main species
1	Erra	7,389	Comperentum, Terminalia, Accacia ssp, Khaya senegalensis and Albizia zigia.
2	Otzi East	425	Oxytenathera abyssinica
3	Otzi West	18,757	(mountain bamboo), Terminalia and Comperentum ssp, Khaya senegalensis, Khaya grand folia.
4	Ayipe	894	
5	Atiya	194	
6	Eria	575	Butyrospermum hyperemia and Khaya grand folia.
7	Lubajo	131	

Riparian vegetation.

The zones bordering the Nile and extensive areas of Obongi are composed of swamps. Papyrus swamps also exist in valleys.

Current Status of the vegetation cover

Generally, the vegetation cover is still adequate, though densely populated areas are undergoing rapid change in this respect (no upto date data on the current vegetation loss). So far, 28429 Ha. of forests have been gazzeted for reserve and plantations. The largest reserve of Otze is a conservation area, which is not meant to be exploited in any way. In highly populated areas, encroachment on these reserves is not common.

The main pressure behind rapid vegetation cover includes:

- Encroachment especially in CFRs through settlement, cultivation, and overgrazing.
- Illegal activities like pitswyng, commercial firewood harvesting, charcoal burning, bush fires and harvest for bush fires.
- Increasing number of refugee settlement and
- Cottage industry.

Deforestation is environmentally hazardous and also deprives people of the important values of forest to provide products.

In this context, there is need for afforestation, which is being encouraged by the District and ACORD. Farmers should be educated on the issue of tree planting and practicing conservation methods.

A land use policy should also be addressed in order to encourage forest expansion while extension services should be encouraged through institutional support. District wide forest conservation campaign should be carried out.

Post cultivation communities and Agro forestry.

These mainly consist of Eragrostic –Chloric –Hyparrhea species. They have come as a result of varied man’s activities such as cultivation, settlements and burning.

The main agro-forestry activities in the District involves cultivation and grazing in forest reserves and includes the following types:

- Woodlot establishment
- Grazing of livestock on communal land and forest reserves
- Establishment of perennial crops e.g. Coffee, bananas with trees especially in Metu Sub County.
- Alley and Hedge planting and also fruit tree planting in over 90% home stead.

Utilization.

The forest resource is an important source of valuable materials for building, firewood, fertile agricultural land etc. the valuable products from forests is already making the forests to be encroached upon.

The main pressures on utilization include:

- Increasing popularity of wood fuel intensive economic activities such as brick burning, charcoal burning and distilling alcohol.
- The increasing demand for fuel wood and house building materials due to the influx of the refugees from Sudan who are expected to build houses in transit camps or settlements.
- Clearing of forests for cultivation e.g. Eria forest reserve. Forest utilization can degrade in to deforestation of forest with negative impacts on the environment and the economy of Moyo District.

Pests.

Forest resources in the district are prone to pests and diseases especially termites.

Causes of widespread pests and diseases are:

- Prevailing climatic conditions.
- Lack of extension services.
- Ineffective management system.

There would be need to provide spraying facilities and carrying out research so that natural enemies of the pests can be introduced to avoid expensive pesticides.

2.2.2 Wetlands.

Moyo district has about 196.0km² of permanent wetlands and 38.2km² of seasonal wetlands. Wetlands in the district are mainly used for growing crops and grazing livestock in the dry season. Generally, there is no up-to-date data on the issue of wetlands in the district.

Table 2.4 Summaries of Wetlands in Moyo District.

Wetland name	Type	Land use	Threats
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Albert Nile drainage system			
Amua	P, S	Cultivation	Cultivation
Chala	P, S	Cultivation, grazing, settlement	Cultivation, deforestation
Gango	S	Cultivation, grazing	Overgrazing, bush burning
Kingolonga	S	Wildlife reserve	Bush fires
Nyawa	P, S	Cultivation, grazing refugee settlement	Cultivation, deforestation.
Omvosso	P	Cultivation,	Bush fires
White Nile drainage system			
Aturua	S	Cultivation, grazing	Cultivation, deforestation
Ayiro	S	Cultivation,	Cultivation, deforestation
Lolo	S	Cultivation, grazing	Cultivation, bush fires
River Nyawa drainage system			
EE (II)	S	Cultivation, grazing	Cultivation, deforestation
Leya	P, S	Fishing, grazing	Cultivation, deforestation, settlement.
Lereje	S	Cultivation, grazing refugee settlement	Cultivation, deforestation, refugee settlement.

Source: Wetland inventory report, 2001(S= Seasonal, P= Permanent)

Reclamation.

The main pressures behind this would include;

- Population pressure, which has resulted in scarcity of land in some parts of the district, could be forcing people to cultivate wetlands for growing vegetables, rice and maize.
- Unreliable rainfall has forced people to cultivate wetlands to increase crop production.
- Brick making is mostly done in wetland areas near towns like Moyo where the demand for these has increased.
- The construction of feeder roads especially to the refugee settlements (e.g. Morobi II Settlement) could lead to the reclamation of the wetlands in the district.

The reclamation of wetlands affects the flora and fauna of the wetlands and the lowering of the water tables in areas near wetlands.

There would be need to conserve the wetlands through the passing of by-laws and education on proper management of wetlands in the district. The community and the urban authority should participate in the management of the wetlands.

Utilization.

In Moyo District, wetlands are being used for crop growing and livestock grazing as noted above. Fishpond constructions are being proposed for development in the wetland areas. Wetlands are also used for brick making as well as water supply for Moyo town.

The main pressures causing this include;

- Un reliable climate in the district.
- Increasing needs for wetland products e.g. the clayish soils for making bricks, malting, basket etc materials.
- Scarcity of water and grass for livestock in the dry season.

Pollution.

Pollution in wetlands could result from a number of factors with future development of the district which include:

- Agricultural use of the wetlands.
- Expansion of the manufacturing.
- Sewage disposal
- Brick making.

The impact of pollution could be ramified through wetland laws, which could prohibit the disposal of harmful products in the wetlands.

Policy/Laws and Regulations.

There had been no effective policy or regulations regarding use and management of wetlands before 1995 in Uganda. In 1996, the wetlands policy was formulated and its effectiveness is yet to be felt.

Ineffectiveness of laws and regulations is a result of;

- Low literacy rate of the population.
- Lack of extension services.
- Anti-people and biased regulations.

The laws are considered foreign and more often are resisted. While appropriate policies can lead to the wise management of wetlands to sustainably supply a multiplicity of goods and services, inappropriate policies or lack of policy implementation can lead to the deterioration of the wetlands.

This can be averted by building local and district institutions like the DEC/LEC and structures necessary to educate the people about the policy, laws and regulations of wetlands while offenders of the laws could be apprehended if found liable.

The water hyacinth problem

The problem.

Water hyacinth, *Eichhornia crassipes* has become an issue in Moyo District because it is well established throughout the slow-flowing, fish-rich section of the River Nile up to Nimule. It affects the people of the district in a variety of ways especially, fisher folks in the district. It also lowers the quantity of water because of its obnoxious nature.

Impact.

There is a growing threat of water hyacinth in Moyo District section of the Albert Nile. There is an observed and potential impact of the water hyacinth on the reduction of the fisheries resources in the district.

Existence of this weed in the district has caused the following problems;

- Complicated accessibility to the district via Laropi.
- Reduced fish catch and incomes from fish
- Decline in water quality of the Nile River through rotting leaves and stems suffocate aquatic life.
- Habitats for dangerous animals such as snakes.
- Generally, decline in households, which used to depend on the river for income generation.

Interventions.

There are a number of suggestions to control the weed, some of which are not yet verified. Physical removal using manual/ or mechanical means; chemical and biological control; alternative control; water level control; water shed management and integrated control have been suggested (FAO, 1991). None of these has been applied in Moyo District.

The main pressures stopping this include;

- Lack of research to find cheaper alternative control method.
- Fear of environmental control e.g. chemical methods.
- Lack of funds to implement water hyacinth programmes.

Lack of intervention will perpetuate the negative impacts of the weed while the water bodies will get polluted.

2.2.3 Water Resources.

The water resources are important in socio-economic development, human health, fisheries, maintaining long term ecological balance, recreation, transport and tourism.

Moyo district has about 107.5 km² (5.55%) of its total area under open water. Water is obtained from the Nile River and other smaller ones. Water is also obtained from wetlands, underground supplies and rain harvest through gravity flow scheme and other means. Issues concerning the water resource in Moyo district are discussed in the following sections.

Quantity.

Water department notes that 56.0% of Moyo's rural population was adequately served in terms of clean water in 2004.

There are 49 protected springs and 340 boreholes, 77 gravity flow scheme points, 55 shallow wells in the district. Water is further obtained from the 107.5km² of open water and 234.3 km² of wetland in the district.

The main pressures on the quantity include:

- Lack of enough spare parts in the district when there is a breakdown in boreholes.
- Inaccessibility of the banks of the Nile in west Moyo. Remote areas are also less accessible to borehole drilling.
- Lack of many springs in the Nile basin and the fine soils of the district, which makes the drilling of the boreholes difficult.
- The dry season affects the supply of water from springs and streams, which normally dry out affecting the supply of water.

Table 2.4 Safe water coverage by Sub County.

S/N	SUB county	Percentage coverage (%)
1	Gimara	11.4
2	Aliba	17.9
3	Itula	59.4
4	Lefori	34.0
5	Moyo	80.1
6	Metu	110.6
7	Dufile	49.5
8	Moyo Town Council	68.4

Source: Water Dept. 2004.

Table 2.5 Number of Water Source by technology by Sub County.

S/N	SUB county	Safe water technology				
		Deep wells	GFS Taps	Protected springs	Shallow wells	Total safe water source
1	Gimara	12	0	0	5	17
2	Aliba	18	0	0	4	22
3	Itula	109	0	0	3	112
4	Lefori	19	0	1	9	29
5	Moyo	84	0	18	17	119
6	Metu	42	66	29	2	139
7	Dufile	34	0	0	12	46

8	Moyo Town Council	22	11	2	3	38
Total		340	77	49	55	512

Source: Water Dept. 2004.

NB: Information given in the table excludes private household connections.

There has been improvement in safe water coverage over the last ten years, from 34% to 56% in 2004.

However, external agencies should come in with projects on water supply in the district particularly for rural areas so that the district achieves 100% water coverage by the year 2017.

Table 2.6 Safe water status by location in the District:

S/N	SUB county	Safe water status		
		Abandoned	Functional	Temporary down
1	Gimara	6	10	01
2	Aliba	4	15	03
3	Itula	12	96	04
4	Lefori	4	25	00
5	Moyo	16	94	09
6	Metu	17	117	04
7	Dufile	5	41	00
8	Moyo Town Council	4	33	01
Total				

Source: Water Dept. 2004.

Quality.

A good proportion of the population in Moyo district and their animals relies on unsafe water from streams/rivers. Safe water is obtained from boreholes and protected springs and tap- water, which are scarce.

The main pressures contributing to the poor quality in particularly rivers and streams include:

- Poor hygiene among the population. It is common in the district for people to dispose off feaces in the open. Theses are washed in to the rivers and streams and get contaminated with diorrhoeal disease. Fisher folks also wash, bath and dispose off waste in the river.
- Pollution from the soil erosion due to poor methods of cultivation and deforestation and the obnoxious water hyacinth also lower water quality especially in the Nile River.

Poor water quality in the district is hazardous to human and livestock health.

To reserve this trend, tree planting and good methods of cultivation should be under taken to stop soil erosion, which pollutes the streams and rivers. The water hyacinth should also be eradicated through concerted local and international efforts. Programmes must be developed to provide boreholes; protected springs etc. clean water is supplied in town areas and also in the refugee settlements.

Management.

Many of the boreholes drilled in the district have a management committee in charge of mobilizing resources for repairs and maintenance. Generally, community participation is being encouraged in the management of water resource particularly for boreholes and protected springs. Management of other water sources such as streams and rivers is not there in reality.

The main problems associated with management generally include.

- Increasing deforestation particularly in densely populated areas, which cause soil erosion and climatic change hence affecting the quantity and supply of water.
 - Excessive use of the wetlands in the dry seasons for cultivation and grazing which lowers the water table important in replenishing water sources
 - Lack of water development programmes in the district.
 - Degradation of river banks, especially along river Nile and Challa stream.
- Inadequate management often leads to pollution, destabilizing water table and also unreliable climate.

There are water development plans in the district. This should be implemented. Re-afforestation and afforestation processes are being undertaken which indirectly will improve water supply in the district.

Catchment areas.

Afforestation in catchment areas has been a policy issue but this has not stopped their degradation. Most of these are now bare having been de-vegetated by man's activities.

Major causes of catchment degradation include:

- High demand for fuel wood and building materials.
- Uncontrolled bush fires
- Population pressures.
- Poor management practices of catchment areas.
- Inadequate afforestation programmes in the district.
- Land tenure system.

The implications of these are that unreliable rainfall, water supply and increased soil erosion e.g. in Metu and Dufile areas have resulted.

The efforts of afforestation programme by UNHCR through the District and ACORD and NUSAF programme should be commended in a bid to protect and develop catchment areas in the district. More forestry activities should be encouraged in the hilly areas of the district.

Pollution.

Pollution of water bodies especially the natural water sources is an increasing problem in the district.

The main pressure behind this includes:

- Soil erosion due to poor methods of farming and deforestation to meet the needs of the increasing population in Moyo district.
- The water hyacinth infestation on the river Nile has caused pollution in the Nile because of its obnoxious nature.
- Poor hygiene e.g. disposal of faeces in the bushes, pollute water bodies.
- The Lime mining in the Metu area has caused the pollution of Lea Stream.

The results of these are that the water sources become unsafe for human and livestock consumption. The fish and aquatic life in the water bodies will be affected.

2.2.4 Fisheries Resources

Fishing is a part time activity, which is most often combined with farming to provide for basic household needs. Mainly men who use mostly traditional methods practice fishing. The species caught in the Nile include Nile perch, tilapia, claries, and lungfish.

Fish farming is being experimented in Moyo Sub County, although areas of Metu are also suitable.

Issues, which influence the fisheries resource in Moyo district, are discussed in the following sections;

Harvesting.

Fish harvesting is done through the use of traditional methods, such as wooden boats or dugout canoes, nets and hooks. Fish harvesting is done at landing sites for quality assurance by fisheries department. Moyo District has 06 landing sites (i.e. Pakonira, Congo, Lereje, Ndirindiri, Maduga, Go- Down and Alibabito) Poisons and mainly women use baskets on small streams in the dry season.

Table2.7 Average Fish catch by sub county per month (tones).

S/N	Landing site	Average catch per month (tones)
1	Dufile (Pakonira, Congo)	2.20
2	Itula (Lereje, Ndirindiri)	3.0
3	Aliba (Alibabito)	4.0
4	Gimara (Go- Down, Maduga)	6.0
	Total	15.2

Source: Fisheries Dept, (Aug-Nov. 2003)

However, the data collected in June 2004 showed decline in fish catch by sub county as indicated in the table below.

Table2.8 Average Fish catch by sub county per month (tones).

S/N	Landing site	Average catch per month (tones)
1	Dufile (Pakonira, Congo)	1.5
2	Itula (Lereje, Ndirindiri)	2.0
3	Aliba (Alibabito)	2.0
4	Gimara (Go- Down, Maduga)	5.0
	Total	10.5

Source: Fisheries Dept, (June. 2004)

The main pressures that lead to decline in fish catch include;

- Inefficient harvesting techniques.
- Over fishing which cause fish depletion. This is a direct result of poor fishing methods used.
- The water hyacinth on the Nile which affects the fish, transport and floating away with fishnets.
- Floods that disrupts fish breeding grounds
- Clearance of wetland resources e.g. papyrus, that has direct influence on fish habitats.

Fisheries in the district, contributes significantly on the livelihood of the people. This becomes a problem when fish harvests are affected.

In this regard, currently, a skills training programmes particularly within the fishing community aims to develop skills needed to produce inputs for fishing which is being offered by fisheries department.

Processing.

Fish handling and processing has and still is largely in the hands of artisan fisher folks. Methods of fish processing in Moyo District include smoking, salting and sun drying. Much of the fish handled in this way have been of inconsistent quality.

The main pressures behind the perpetuation of poor processing methods include.

- Limited market for the fish caught in Moyo has failed to develop commercial fishing, which encourages use of efficient processing methods.
- Lack of infrastructure or storage facilities in the district.
- Cultural practices.
- Poor road infrastructure and general insecurity has isolated the fisheries from the fish companies in Kampala.
- Poverty among fisher folks makes them unable to acquire new processing technologies.

Poor methods of processing result in post-harvest losses, which affect the livelihood of the people who depend on the fisheries resources.

Management.

Fish farming as a management process is currently being experimented in Moyo and Lefori sub-counties. There is no Buffer zone management on river Nile. Generally, fish management is poor in the district.

The main factors behind this include:

- Inadequate fisheries staff in the district. There are only three staff members in the fisheries department.
- Lowly remunerated and motivated fisheries staff, which does not encourage extension services.
- Un cooperating fisher folks who carry on illegal practices such as using nets that can lead to over fishing.
- Lack of fisheries development programmes in the district.

To improve on management, the skills training programme for the refugees on fishing should be commended and at the same time a liaison should be extended to all the fisher folks in the district. Fish farming would help management efforts to go a long way. Institutional support should also be extended to the fisheries resource in the district.

Fisher folk Communities.

Most of the fishing communities in Moyo district are temporary. These villages lack social services like schools, good drinking water and sanitation. Most of the inhabitants are men. Women who come mainly to buy fish and sell products (e.g. food stuff and alcohol) form a small proportion of the population. Poverty and generally low standards of living is found among the fisher folk communities in the district.

The main problems behind this include:

- Inaccessibility of most fishing areas to provide services such as safe drinking water and sanitary facilities.
- Low levels of income, which cause poverty and poor standards of living.
- Inadequate energy since most trees has been exploited for fishing processing without replacements for generations.
- Over drinking among fisher folks who cause poverty and lawlessness.
- Lack of credit facilities to improve on their activities.

Poor communities usually lack the ability to manage resources efficiently. There are cases of over exploitation of fish in the district. Deforestation and pollution from soil erosion and poor hygiene among fisher folks are rampant among these communities. The long-term effect is the deterioration in the fisheries resources in the district

There is need therefore to educate the fisher folk communities to improve their surrounding to attract attention. Feeder roads and social and economic infrastructure should be put in place to make fisher folk communities more accessible.

Cross-border issues

There is no up-to-date data on this. But possible problems are the insecurity from the neighboring districts. There is no information on the management of shared fisheries. Sizeable quantities of fish are supplied in Arua and Gulu districts.

The possible causes behind this include;

- High demand for fish out side the district.
- Inadequate cooperation between counties or the district on management and research.
- Political instability and criminal activities, which make cross border trade and management between district and the Sudan difficult.

Cross-border problem can result in management of buffer zones and over fishing, which will in the long run affect the livelihood of the fisher folks in the district.

This trend, if it re-occurs or is occurring should be tackled through interregional conventions and agreements so that offenders are held liable.

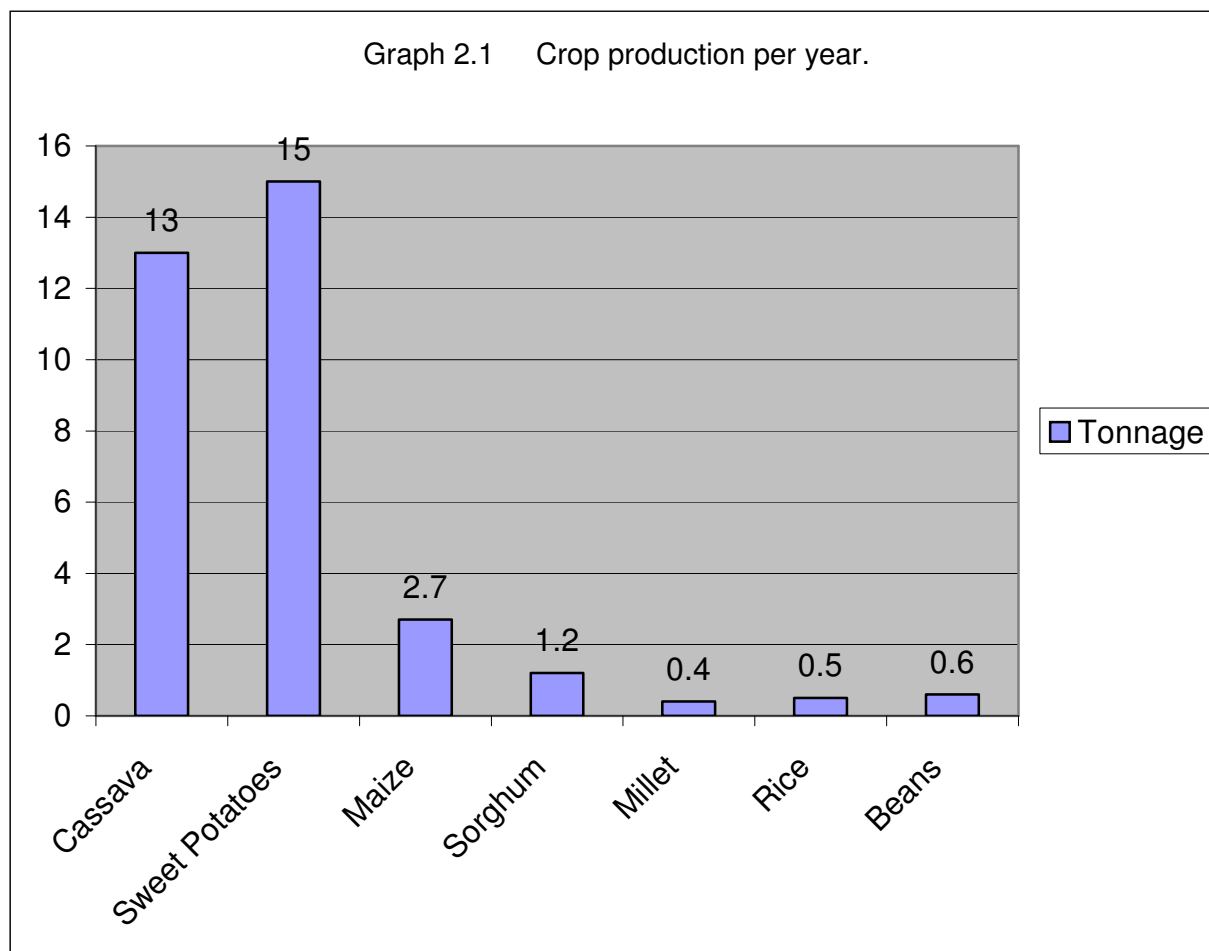
Regional cooperation and organizations should be formed to preserve the fisheries resources.

2.3 Agriculture

Agriculture is the main economic activity in Moyo District. Over 90% of the population derives its livelihood in subsistence agriculture mainly. It is mainly smallholder activity, labour intensive and low technology input.

2.3.1 Food security.

Food security is defined as access by all people at all times to sufficient food by all to meet dietary needs for a productive life. Food can be obtained from local production, or imported from the rest of the world, incase of shortage. Food security is depended on agricultural production.



Production figures for 2003 for food crops showed that production of staple crops has in general increased, while the production of other crops has decreased (Agric Dept 2004). Simsim production has also increased substantially with the introduction of new varieties.

Main factors behind increased food production include.

- Relative security for people's lives
- Labour availability
- Effect of NGOs support such as , AAH and ACORD and others
- The distribution of food aid to refugees in the district
- Increased central government funding through LGDP and AECG.

Agronomic Practices.

There is dependence on cassava and sorghum as drought resistant varieties. The mode of production includes intercropping, rotation and grass wash stops left in fields as good husbandry practices. The hand hoe is predominantly used; ox-plough is used by a few people while tractor and pesticide and fertilizer uses are limited to few prosperous farmers.

The main causes of this include;

- Variations in rainfall patterns.
- Tradition.
- Poverty, which is the major cause of people in the district resorting to poor technology accessibility.
- Lack of agronomic knowledge among farmers.

This trend results in the low production and poor quality of crops in the district.

In order to address this problem, the introduction of new practices should be encouraged. Improvement on technology is important. People's income should be improved through good prices for their produce so that they can afford new and efficient technologies.

Cultural Practices.

While the clearing of land, planting cash crops depend on men, women plant, weed, harvest, transport, store, and sell small quantity of crops to obtain cash. Family labour is often supplemented by hired labour and by reciprocal labour exchange.

Further, bush and crop residue burning is practiced in the process of cultivation; agro forestry is not encouraged while animals are not allowed to graze on fields.

The main pressures behind this involve:

- Tradition and cultural believes.
- Fragile soils which needs extensive cultivation if agriculture is to be economic.
- Lack of knowledge on agronomic practices.
- Poor technology, which does not encourage other methods.
- Local experience, which perpetuates cultural practices.

Generally, the cultural practices are not efficient modes of production. It does not encourage commercial agriculture where environmentally friendly techniques can be adapted.

Extension.

The extension services provided is still inefficient since not all the sub counties have Graduate Agriculture Officers. Most farms out side refugee settlements hardly get advice on the best crops to grow in the area.

The main factors contributing to this are:

- Low motivation to extension officers.
- Breakdown in the cooperative society, which used to provide extension services particularly to tobacco and cotton farmers.
- Inadequate funds to provide extension services.

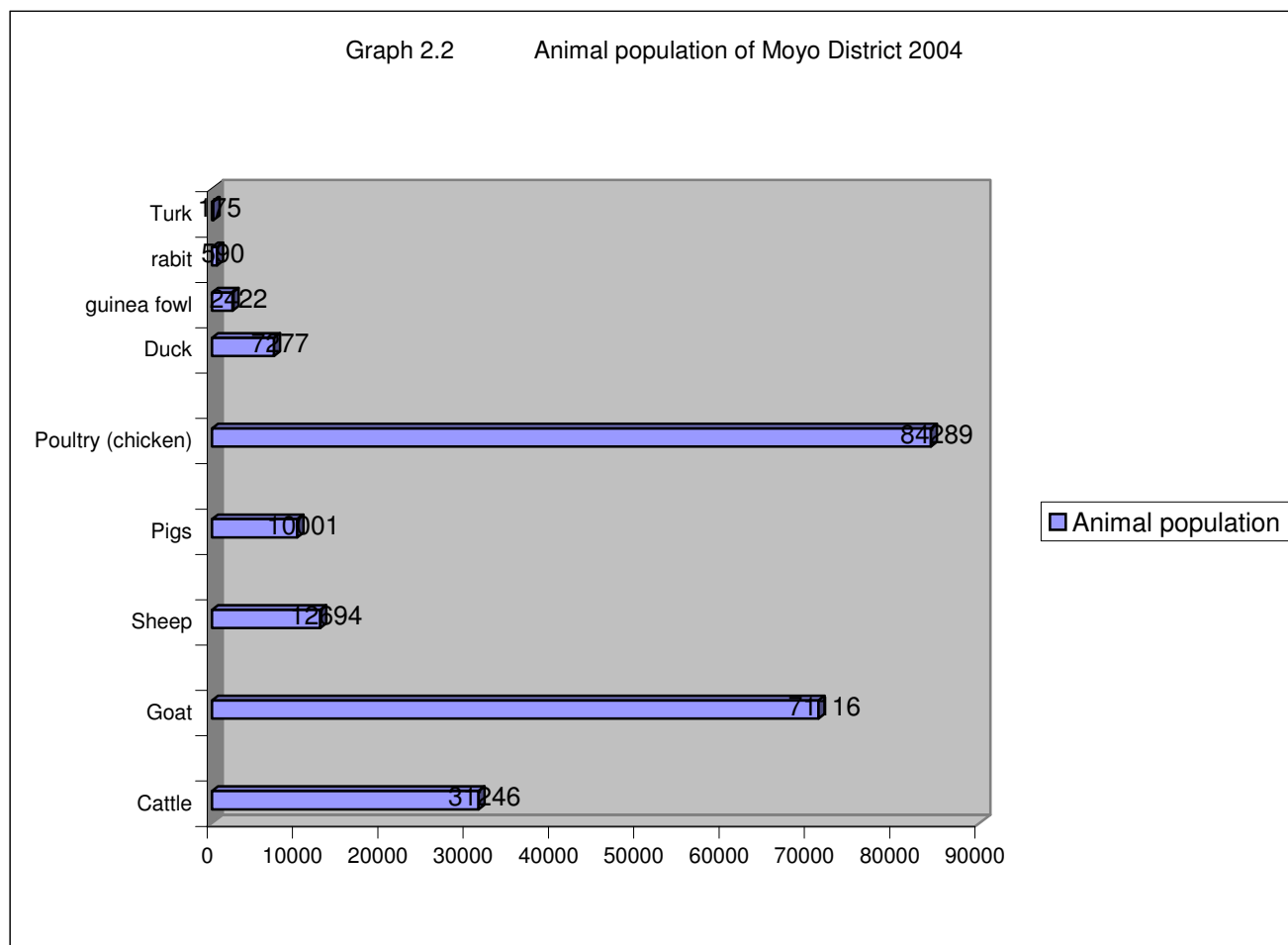
This has resulted in the low agricultural productivity in the district in addition to climatic variability. This stops farmers from producing surplus, which can be used for investment.

In this regard, there is need for institutional support in the extension service so that they can become operational. The district authority could liaise with NGOs providing extension services on agriculture in refugee settlements so that the local people also benefit.

2.3.2 Livestock/ rangelands.

Though practiced on a small and non-commercial scale, livestock husbandry is and integral part of the majority of the population in Moyo district. It is estimated that 50% of households own cattle, 75% own goats, 40% own sheep, and 90% own poultry of some sort.

In most parts of the district there is plenty of grazing land in relation to the number of cattle. Scarcity of areas for grazing is noticeable in parts of Moyo, Itula and Metu sub-counties. Generally, there is less grass during the dry season.



The main causes of this trend include:

- The 1979 war.
- Widespread diseases.
- Cultural practices
- Tsetse fly.

Although there is no information on overstocking in the district, it is possible where communal herds graze and can cause land degradation as a direct result of over grazing.

In this regard, there is need to educate the livestock owners on the need to keep livestock particularly cattle, sheep and goats in line with the carrying capacity of the grazing areas.

Range management.

Range management in the district is managed through frequent burning to promote grass growth. This is mainly done in the dry season. There is no practice of modern methods of ranging such as fencing, pad docking or rotational grazing.

The main factors contributing to this include:

- Burning encourages the growth of new and better grass.

- Cultural practices.
- Dry season hunting.

This increases the growth of fire resistant and un palatable grasses. The practice also causes the land to deteriorate due to bare soil patches that usually develop.

There is need therefore to control bush burning. The support for conservation efforts should be encouraged through extension services. There is also need for education of the livestock keepers about range or pasture management.

Diseases/tsetse.

Constraints on animal husbandry in the district are, for the most part related to disease prevention and cure. The main diseases threatening animal are summarized in the table hereunder.

Table 2.11 Common animal diseases.

Animals	Common diseases
Cattle	<ul style="list-style-type: none"> • Contagious Pleura Pneumonia • Black Quarter • Helminthosis • Babesiosis • Contriosis • Anaplasmosis • East Cost fever. • Skin Disease • Edoparasitosis • Trypnomiasis • Fascioliiasis
Goats	<ul style="list-style-type: none"> • Orth • Mange • Helminthosis • Ectoparasites • Worms • Respiratory infections
Poltry Disease	<ul style="list-style-type: none"> • New Castle disease • Coccidiosis • Salmonellosis • Infechrus Bronelitis • Ectoparasitosis
Pigs	<ul style="list-style-type: none"> • Cystreecus Cellullossae • Respiratory track infection • Erysipelas • Ectoparasitosis • Helminthosis

Source: Vet Dept.2004.

The causes of disease prevalence include:

- Extensive cross border movements of cattle.
- The perception by many farmers that vaccines can be harmful to animals.
- Animals normally drink in tsetse fly breeding areas.
- Cultural attachment to animals.

Dipping the cattle in insecticides can prevent tick borne diseases. However, the five communal dips in the district have just been rehabilitated under LGDP. Therefore, quarantine facilities should be put in place to check diseased animals on the move. But laws have been put in place to control livestock movements.

Extension.

There are only five communal cattle dips in the district. There are no quarantine facilities. Marketing services are still limited with construction of holding ground in Erepi, Metu Sub County. There is also a community based trapping systems for tsetse flies.

The main pressures behind inadequate extension services include:

- Perception that vaccines cause cattle death causes them not to embrace extension services.
- Lack of local support to facilitate extension services.
- Remoteness of most rural areas.
- Inadequate motivation for extension staff.

Extension services are important in disease control and range management and hence vital to livestock production and environmental protection.

In this regard, vigorous extension services should be availed in the district. Cost sharing by farmers should be encouraged through education while every effort should be made to seek institutional support for this vital sector in livestock and range management.

2.4 Wildlife resource.

Wildlife in Uganda is a major economic resource. The tourism industry has some roots from the abundant wildlife resource in the country.

Moyo district wildlife is found in the 83,123 ha of animal sanctuaries in Otze and Dufile (Williams, 1997).

These wildlife areas included animal species e.g. Buffalo, Uganda kob, hartebeest in short grass areas, and Black rhino in the thorn-bush country to the north and west. Giraffe also existed in these areas. Poaching on these areas has greatly reduced the number of these animals since early 1960s. Most of the animals are extinct.

Poaching.

Poaching is a serious problem in the wildlife areas in Moyo district. Elephants and black rhinoceros used to live within the district but now they are extinct. The hippo also reduced almost to the point of extinction.

The main pressures behind poaching include;

- The meat for wild animals for food and cash income.
- Tasks of particularly elephants and rhinoceros

Poaching has caused the decline in number and even extinction of some wildlife in these areas.

Vermin.

Animals from the wildlife areas often disturb people living around them when they get out of the gazetted areas. These include monkeys, baboons, and other large animals, which get out and destroy crops and other property.

This situation is often caused by:

- Tsetse fly infestation.
- Uncontrolled poaching i.e. animals run for their lives.
- Lack of control measures by wildlife management authorities.

- Encroachment on protected areas.

2.5 Settlement

2.5.1 Settlement and Urbanization.

The majority of the populations in Moyo District are settled in rural areas. Most of the environmental problems in rural settlements are lack of clean water, good housing, better sanitation and other infrastructure. Most of the rural population depends on the natural environment for their living.

Urbanization in Moyo District is generally low. Most of the urban inhabitants are not local people but those working in NGOs and government offices. The population of Moyo town grew at an annual rate of 9.7% between 1991 and 2002. It is believed that this urban population growth was due to migration from rural areas within the district and refugee settlements in the town.

Zoning.

About 3.75 km² of the area in Moyo District has been described as built up urban area. Farm or rural settlements occupy about 2055.25km² of the district.

Table 2.12 Population by Urban center by sex in Moyo District.

Urban center	Male	Female	Total
Moyo Town Council	6,237	6,190	12,427

Source: 2002 Population and Housing Census.

Causes of lack of effective zoning in Moyo District include:

- The refugees' settlement problem.
- Land tenure system.
- Settlement pattern
- Lack of Surveyor for Town Council.
- Lack of land use and physical planners.

Lack of proper zoning discourages the provision of services and encroachment on natural resources such as forests, for fuel wood, building materials etc. indiscriminate use of the natural resources is already taking place in the district.

In this context, there is need for a comprehensive District land use planning policy. Physical planning should be implemented so that social services can be provided in the rural and urban areas.

2.5.3 Housing..

Over 70% of the houses in Moyo constitute the traditional grass thatched houses with walls made of burnt bricks. Some of the walls of traditional houses are either made of un-burnt bricks or burnt bricks. In the last three years, there has been a growing demand for burnt bricks in rehabilitation and private construction work.

Main causes of poor housing include:

- Inadequate institutions, which support improved housing e.g. building societies.
- Low levels of income.

- Population pressure.
- High cost of better building materials.

Over dependence on the local natural materials for housing causes pressures on these materials and consequent environmental degradation.

To reduce these problems, there is a need to develop housing programmes so that alternative-building materials can be provided and the people acquire healthy living environments. Afforestation in the district is important for continued provision of building materials. Proper physical planning should be encouraged particularly in urban centers to improve on housing conditions.

2.6 Environmental Sanitation.

Improved traditional pit latrines are generally used in the district. A good number of households lack sanitary facilities. About 45.4% of households in the district lack sanitation facilities, 46.2% have pit latrines and only 8.4% have others. Some of other types that exist are ventilated improved pits ecological sanitary latrine, especially in schools.

Table 2.13 Sub County percentage latrine coverage

Sub County name	Latrine percentage coverage. (%)
Moyo	83.9
Metu	70.0
Dufile	48.9
Itula	58.4
Aliba	50.0
Gimara	68.6
Lefori	63.4
Moyo Town Council	80.0

Source: DDHS/Moyo, 2004

The main problems behind these include

- Lack of rural training/awareness programmes.
- Low levels of income to construct good latrines.
- Inaccessibility to the banks of the Nile.
- Low population densities in some areas.

Lack of proper sanitation facilities is dangerous to people's lives. The situation on these in Moyo could be improved through education on public health and Water and sanitation programmes.

Accessibility.

This is generally poor in Moyo District. Most people are unable to acquire social and economic services.

Main causes of inaccessibility to the district include:

- Remoteness of most settlements.
- General civil strife in the country.
- Lack of resources to implement development programmes

The availability of social and economic infrastructure is important to improve the livelihoods of people and reduce poverty, which is highly related with environmental degradation.

2.7 Waste management

Waste management facility in the Town Council is majorly landfills. Town Council currently has a dumping sit in Arra Hills. Due to the location of the site, (uphill) it proves to be a treat to livestock especially in Moyo sub County when non-biodegradable wastes are flown down stream by running water.

However there has been a new proposed site for waste management in town council, in Pamoju village, about 7km from the Main town.

2.8 Population, social development and social services.

2.8.1 Population.

The population of Moyo District, which is predominantly rural, and by the time of the 2002 population and housing census, totaled to 202,291 people. 27,984 people are refugees who have crossed in to the district from the Sudan.

The structure of the population is that most of the people are young. The population density in the district varies between 8-10 to 110 inhabitants per km².

Indeed population has direct and indirect influence on the natural resource base. Where population exceeds carrying capacity, there is a problem of environmental degradation.

2.8.2 Growth Rate.

Average annual population growth rate from 1991-2002 was 8.0% (National Population and Housing Census, 2002).

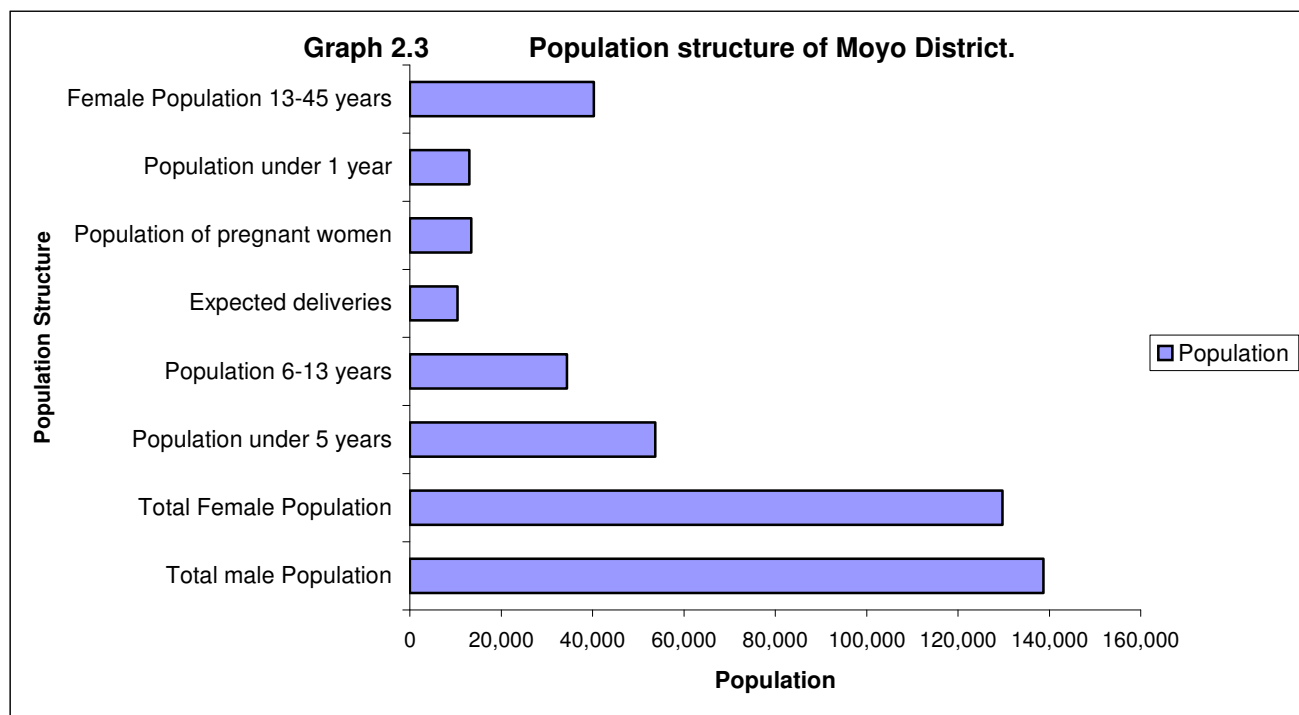
The main factors, which have caused this, include:

- Sudanese refugees.
- High fertility rate
- Early marriage for girls.

Table 2.14 Population structure of Moyo District

Demographic data	
Total Population 2002 Census (mid-year projection 2004)	268,593
Total male Population	138,736
Total Female Population	129,757
Population under 5 years	53,719
Population 6-13 years	34,370
Expected deliveries	10,465
Population of pregnant women	13,430
Population under 1 year	13,061
Female Population 13-45 years	40,289
Population density	130

Source: DDP 2004/05-2006/07- Moyo District.



High growth rates above the natural resource capability to provide enough resources may lead to over-exploitation on forests, land which lead to environmental degradation over time.

Family matter education and family planning should be facilitated in the district. There is only one Family Planning Clinic in Moyo District. Hospitals and schools are helping in education of people about the need for planned population growth.

2.8.3 Ethnic composition.

The Madi constitute the majority (82.3 %) of the Ugandan population in Moyo district. Other ethnic groups represented include the Aringa and Lugbara (11.0%) and the Kakwa. The Madi, Lugbara and Aringa have Sudanic origins, while the Kakwa have Nilo-Hamitic origins.

Within Madi, distinctions must be made between groups living in different areas of the district. In Obongi County, several sub-groups of Madi are present.

They are the product of contacts with other neighbourig ethnic groups and include the Gimara, the Reli, and the Aliba. The Gimara and the Reli speak 'Lowi', and language intelligent to Kakwa speakers. The Aliba speak a language resembling that of the Aringa, a sub-group of Lugbara from Arua, now Yumbe district.

2.9 Genders and Environment.

The majority of Moyo's people lives in rural areas and derives a substantial portion of their livelihood from agriculture. If students are excluded, few of both men and women are formally employed.

The differences in activity status between men and women are significant. Nearly 35% of men are self-employed, against 20.2% for women. Approximately 37.36% of women are unpaid family workers compared to 17.4% of men. Household workers comprise 20.9% of women, and 4.6% of men. Though census data poorly reflect the diversity of people's livelihoods, they indicate broad trends in employment status. The implication of these figures is; a majority of women do not have an independent income to sustain themselves, and the women depend on husbands for family member survival. And, although many women may be involved in household farming, a majority of them do not control a substantial portion of the benefits. If they do control some of the produce it is to a large extent exchanged on the local market in order to acquire other necessary daily requirements.

Although women are represented in the areas of craft, services and elementary occupations (which include domestic employment and manual and agricultural labour), there are very few among technicians a sector, which requires some formal technical training. The category 'other' while insignificant for women is substantial for men as it includes managers, professionals and machine operators. Women are practically absent from these three sectors of employment. The numbers of both men and women in sectors requiring technical skills are very limited, the latter are relatively under represented conversely, women who are employed in the non-farm sector are concentrated in low skill labour intensive low paying activities.

On the domestic and social activities side, activities related to food, children, water and household cleanliness are performed by women. Women collect fuel wood and grass for roofing. Men are involved in house construction. In general, men's work in the home is seasonal, whereas women perform most of the daily chores in addition to their responsibilities in agriculture.

2.10 Poverty.

Moyo District is afflicted with poverty problems of poor health, low levels of education and food shortages. There are no up-to date data on poverty in the district. Generally, per capita income is low as in northern Uganda.

The main causes of poverty would be;

- High incidence of diseases, which weaken people to participate vigorously in economic activities such as agriculture.
- Low levels of agriculture, which does not challenge the population to look for alternative ways to generate income apart from subsistence agriculture.
- Unreliable rainfalls in the district have affected agriculture on which over 85% of the population depends.
- Low purchasing power in the district does not encourage the development of markets for produce.

2.10.1 Life Expectancy.

The life expectancy for both male and female in Moyo District is around 46 years at birth, which is slightly below the national average of 48.1% for both sexes. In general, women stay longer than men.

The main causes of death in the district include;

- Diseases and illnesses.
- Poor medical facilities and vaccination services.
- Over drinking by the majority of men.
- Over producing and low attendance of peri-natal and antenatal care services among women.

All these factors tend to reduce the life span of people in the district. Short life expected in the district does not encourage long-term plans afforestation to benefit the environment.

There is need to improve the health conditions in the district through the provision of drugs and the control of diseases. Education on public health should be promoted.

The 2.15 show Social services and physical infrastructure.

Technical services	
Total Kilometers of Feeder Road	194.1
Total Kilometer of Trunk Road	70.4
Total Kilometers of Urban Road	26.5
Number of Major Bridges	08
Health	
Number of Health Units	33
Number of Government Health Units	26
Number of NGO Health Units	07
Number of District Hospital	01

Number of Doctors	07
Water	
Total Number of boreholes	522
Total Number of GFS tapes/kiosks	77
Total number of functional bore holes	432
Total number of non-functional bore holes	22
Total number of functional protected springs and shallow wells	49
Total number of Non-functional and abandoned water points	68
Education	
Total number of primary schools	76
Total number of government aided primary schools	70
Total number of private/NGO primary schools	06
Total Enrolment in primary school	37,588 (Boys 18,842; Girls 17,726)
Total number of teachers in primary school	743 (male:533, female:209)
Total number of untrained teachers in primary school	196
Total number of trained teachers in primary school	644
Total number of permanent classrooms	466
Greatest travel distance to primary school	03
Total number of secondary schools	19
Total number of Government aided secondary schools	03
Total number of Private/NGO secondary schools	16
Total number of tertiary institutions	03

Source: DDP Moyo district.

Challenges

Although the minimum distance to health facilities has reduced from 5Kms to 3Kms the quality of health services remained poor especially in rural areas due to absences of services such as laboratory, family planning and eye. This is further worsened by lack of accommodation for health personnel in rural areas.

The introduction of UPE has continued to have high enrolment ratio of close to 109. It has continued to keep the enrolment ratio for girls even high. Although the quality of teaching has improved PLE performance in most schools in rural areas have remained poor due to lack of qualified teaching staff that are not willing to move out of town with good accommodation facilities. Other challenges include reducing current classroom pupil ratio of 1:66 to 1:55, qualified teacher pupil ratio from 1: 81to 1: 55, pupil text book ratio from 1: 6 to 1:3 and pupil stance ratio from 1: 55 to 1: 40 for boys and 1: 25 for girls

Water and sanitation in schools remains a big challenge though special attention needs to be put on personnel hygiene in schools and the sanitary needs of the girl child, and persons with disability. These were sited as one of the causes of high school drop out rate among girls.

2.10.2 Other Social services Available.

Buses and taxis to Gulu and Kampala were adequate in Moyo. Generally, transport for commercial purposes is in adequate. Laropi Ferry, which ensures the movement of vehicles between the eastern and western banks of the Nile on the Moyo-Adjumani Road, is efficient. There is only one airstrip in the district while railway transport is not there.

On communication, apart from wave transceivers found in some government and international NGOs offices and catholic missions there is better MTN coverage of the district.

The main problems in these sectors include:

- Inaccessibility to rural areas.
- Lack of enough trained teachers.
- Poverty among the people.
- Low population density in the outlying areas of the district
- Rugged terrain and difficult to work.
- The presence of many rivers and springs in the district

- Insecurity along the roads out side the district limits vehicles going to Moyo.
- Inadequate funds to provide efficient communication systems.

3.0 CHAPTER THREE:

3.1 RESPONSES TO ENVIRONMENTAL CHANGE.

After independence, Uganda adopted wholesale the colonial policies and laws governing environmental resources. Resources, which were communally owned, became government property. Most laws were geared towards specific resource uses, and the inter-relationship among them was not strongly emphasized. Specifically, no attention was paid to biodiversity, EIS, wetlands and community participation and constitutional backing was also low.

On realizing the above problems, the government adopted a participatory approach in the development of recent laws; the constitution of 1995, the National Environment Statute, 1995, the Water Statute, 1995, the Wild Life Statute, 1996, the Land Act 1998, the National and Tree Planting Act, 2003.

3.1.1 Environmental Health Policy, laws and regulations.

This is in consonance with the Primary Health Care (PHC) strategy, which seeks to integrate health development into over all development (SOE, 1994). The objectives of this strategy include equity, community and individual participation, multi-Sectoral and the employment of the appropriate technology in improving environmental health.

The Ministry of Health (MoH) and formal NGO sectors and the traditional society are involved in the implementation of the health policy in the district through the District Directorate of Services. The ministry of local government also has roles to play in the implementation of the health policy. While the decentralization policy is looking at developing responsibility for health services to the district and local communities.

The main pressures affecting the implementation of environmental health policy, laws and regulations include:

- Severe financial constraints in the district, which affects the implementation of the environmental health policy.
- Poor remuneration for environmental health workers or workers in general limits their moral to enforce the policy effectively.
- Local communities have not been involved to a larger extent to participating in the decision making, planning and implementation of activities aimed at improving their health.
- Inadequate inter departmental collaboration to enhance environmental quality.

To improve environmental health in the district, a hygiene and sanitation programme should be developed. The drive to provide clean water should be provided. Health by-laws and local health committees and training of more community workers should be promoted while inter-departmental collaboration on health issues should be encouraged.

3.1.2 Mining Policies, Laws and Regulations.

Currently, there are contradictions in policies, laws and regulations regarding the mining sector. For e.g., there is contradiction between land tenure (ownership) and mineral rights (by licenses). While article 237 of the 1995 constitution gives all the land to the people of Uganda, all minerals still belong to the government, meaning, therefore, that citizens have surface land rights only.

There are no clear clarifications on how to compensate landowners in an event of mineral deposit exploitation. This weakness in the legal framework is frequently exploited to the detriment of the local communities on question.

3.1.3 Waste management Policies, Laws and Regulations.

Waste management in Uganda up today, remains a challenge despite the number of bills and institutions made by parliament to deal with the problem. Such bills are not implemented because the available institutions to supervise them are either ill equipped or very young on the ground e.g. Environment Department.

3.1.4 Energy Policy/laws and regulations.

There are no standard laws and regulations either at district level concerning energy development, use and management. Concerned sectors, NGOs or any other interested parties such as district have to develop ways and means of availing, using and saving energy. There are inadequacies in the process of the supply of other sources of energy such as petroleum and electricity etc.

The main pressures behind these involve:

- Lack of financial resources to for instance diversify transport to lower the high cost of petroleum imports and their unreliable supply.
- Poor management of the energy sector, which affects the expansion of energy resources e.g. increasing deforestation.
- Unfavorable conditions which protects interests of the energy suppliers at the expense of the consumers.
- Low investment in energy development programmes.

Poor implementation of the energy policy affects the generation and distribution of the energy resource which are important for cooking, lighting, industry etc. this can also lower nutrition levels and cause deforestation.

3.2 Institutional Framework for environment management.

Institutional building for the management of the environment in Uganda started in 1986 when government created the Ministry of Environment Protection (MEP), charged with the responsibility of coordinating and enhancing natural resource management, harmonizing the interests of the resource users, monitoring pollution levels and advising government on policy and legislation reforms for ensuring sound environmental management (SOER, 1994).

The ministry was later absorbed in a larger ministry of Water, Energy, Minerals and Environment Protection (MWEMEP), which in 1993 became the ministry of Natural Resources (MNR) and finally it became Ministry of Water, Lands and Environment (MWLE). The responsibility for environmental management has been given to Ministry of Water, Lands and Environment (MWLE). National Environment Management Authority (NEMA) now has the responsibility to over see environment management in the country.

Moyo District Department of Environment falls under this institutional framework. In line with decentralization policy, environment management has been decentralized at district and lower levels such as local council committees. The local government Act, 1997 are responsible for environment management, which includes:

Environment sanitation, Appointing environment officers, establishment of environment committees, management of fragile ecosystems, conservation of natural resources, control of pollution and regulating burning.

Moyo district has set all these institutional structures for effective environment management, except the training of DEC, LEC and the DTPC.

The main pressure behind this include:

- Lack of funding for the training
- Lack of motivation for the DEC, and LEC.

There is therefore need to train these institutions to enhance sound environment management in the district.

3.3 Collaboration and networking.

Apart from the Ministry of Water, Lands and Environment (MWLE), there are currently a number of other Sectoral institutions, which are directly concerned with the environment. The works of these sectors have been documented in Moyo District.

The major pressures behind this include:

- The sector-based institutions, which are all, highly centralized, and generally, removed from their clientele.
- Lack of communication resulting in poor planning and implementation.
- Conflicts in responsibility and rivalry in the management of resources.

The result of lack of proper collaboration and networking is that environmental monitoring, coordination, supervision and management are adhoc, sector-based and with considerable duplication of effort. Many areas (such as environmental planning, policy impact assessments, legislation, integration of environmental concerns in socio-economic planning and coordination among conflicting interests) are not covered under any institution's jurisdictions. This will eventually lead to more environmental degradation.

3.4 Environmental education.

Environmental education in Uganda is provided mainly through three principle for formal education institutions (i.e. schools, colleges and universities), non-formal channels (i.e., institutions out side the formal classroom structure, for e.g. through seminars, workshops, conferences or specialized instructions) and informal channels (i.e., also provided out side the formal classroom structure, for e.g. through the mass media like radio, newspapers, televisions, film and theatres).

Environmental education in Moyo District is integrated in the school curriculum. Seminars and workshops and the informal channels provide environment education in the district. An NGO environmental field school (EFS) has been proposed for the district to educate the population about the environment.

Nevertheless, there are a number of problems affecting environment education which will result in lack of knowledge, skills and attitude necessary to understand and appreciate the interrelation among people, their culture and the biophysical surroundings for the purpose of developing responsibility for sustenance of life, resources and development present and future generations.

Environmental education is relatively new in Uganda as elsewhere in the developing countries. The main focus is to integrate environmental issues in to the university system, teacher training and curriculum development for primary and secondary schools (SOER/Moyo, 1997). However, such processes are only stronger in educational establishments than out side these.

In Moyo District, primary, secondary and tertiary non-university institutions are educational establishments, which integrate environmental issues in their systems since they are standardized.

The main pressures behind the environmental education focus include:

- Lack of training of primary teachers in this new material.
- The effectiveness of subjects, which offer elements of environmental education at secondary level, is limited because although knowledge is acquired, skills required for the wise use of natural resources are lacking.
- There is lack of special programmes being offered about environmental education at tertiary non-university institutions.

This will perpetuate the irrational utilization natural resources and sound management of the environment.

In this context, the solution is to create and maintain a deliberate effort of environmental education. There is need to revise the school syllabi and fully integrate environmental education in them. The white paper on education has included environmental protection as one of the broad aims of education.

3.5 Environmental Information.

According to the United Nations Conference on Environment and Development (UNCED), everyone is a user and provider of information in the broad sense. Further more, the need for this information extends from the national and international levels of decision making to the grass roots and individual levels (SOER, 1994).

Generally, there is lack of arrangements to dissemination of environmental data to the users in Moyo district. The current arrangement for the dissemination of environmental information is adhoc. Lack of data, quality, coherence, standardization and accessibility of data in Moyo District, seriously impairs the capacity to make informed decisions regarding environmental issues.

Availability.

Information on the environment is generally lacking in Moyo District.

The major pressures behind availability of information on the environment involve:

- Limited research processes in the district.
- Lack of data bank and Resource center in the district.
- Relevant information in various government departments is hardly transmitted to the extension staffs that are the principle change agents.
- Lack of system to harness project related environmental information. In most cases, once a project is completed, the available environmental information is lost.

The solution to this is to establish Environmental Information Systems (EIS), which can provide information. The DSOER now being processed would make some environmental information on the district available to the public.

Management.

Management of information on the environment in Moyo District is the responsibility of the various sectors which collect, compile and analyzes information about the district. This should be processed in to usable form and put in libraries and kept in data bank in the District Planning Unit for easy accessibility

The main pressures behind environmental information management include:

- Lack of publishing of information in most departments in Moyo.
- Lack of libraries to store information already published.
- Inadequate trained information managers.
- Information hardware, software is inadequate.
-

Environmental information management is important in the safe storage of information essential for people to understand and manage their environment.

3.6 Policy, laws and regulations regarding DSOER.

Uganda is a signatory to several regional and international environmental conventions including those agreed upon during the earth summit and contained in agenda 21 (SOER, 1994.)

These commitments are imperative to the environmental policy now in place. These resulted in the preparation of DSEOR and now the DSOE. The implementation of the second DSOER is being prepared in Moyo; the first was done in 1997. The main pressures behind policy, laws and regulations include:

- Delays in policy, laws and regulations implementation.
- Inadequate manpower at the district level to prepare DSOER.
- Financial constrains for training.
- Materials and equipment and operating.

4.0 CHAPTER FOUR

THE FUTURE

4.1 Key environmental issues in Moyo District.

4.1.1 Refugee Problem.

The problem.

The 1951 UN convention and its 1967 protocol defines refugees as “ a person owing to a well founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion is outside the country of his nationality, and is unable or owing to such fear is unwilling to avail him or herself the protection of that country”.

The population in Moyo District experienced the refugee problem since early 1980s when a very big number of people crossed from the Sudan. Refugee problem came up again in the district in the beginning of 1990.

During 2002 population and housing census it was found that 27,984 people were refugees from Sudan.

This problem has been mainly caused by:

- Civil war in southern Sudan.

The refugee is often a deprived person and can be forced to settle even in marginal areas with enormous implications for the environment. The refugee number has increased the demand for fuel wood and building materials in the district threatening the environment in the district.

The solution for this problem would be to resettle the refugees in the various refugee settlements in Moyo or elsewhere. There is also need to resolve refugee problems peacefully so that they can return to their areas of origin.

Impact

The refugees have been settled in marginal areas of the district. There is over exploitation of resources in these areas. Decline in agricultural production and spread of diseases for human and livestock could be possible impacts of the refugees in the district. Refugee services could also benefit the district (e.g. employment, health services and market for products in the district).

Major causes of these impacts include:

- Increasing demand for fuel wood and building materials for building houses in the settlements or camps.
- Scarcity of land in the settlements promotes use of marginal areas.
- Food aid distributed to refugees e.g. maize and sorghum get sold cheaply in the local markets hence out competing local produce.
- Lack of proper control of refugee movements and also registered refugees settling in the urban areas of the district put pressure on local resources.

Refugees put a lot pressure on the natural resources and available social and economic order. Although there is an assumed developmental effect of refugee impact, there is no up-to-date data on this.

The refugee agencies in the district are working in liaison with the district authorities to reduce the negative impact of the refugees (Sudanese refugees) through the self-reliance strategy. UNHCR is involved in feeder road construction and rehabilitation to areas with refugee settlements while WFP has attempted to institute policies to minimize the negative impacts of food aid on local producers.

Mitigation.

Since the main cause of this problem is insecurity, which does not seem to have very quick solution, any efforts to mitigate the above impacts should consider solving short-term impacts first. These include provision of shelter, food water and health facilities. This could be followed by introducing activities, which are likely to sustain the refugees for as long as they stay such as supporting agriculture through provision of improved seeds and implements on subsidized prices. Training of women and the youth in various skills could also be considered.

4.1.2 The School Feeding Programme

Moyo district local government and world food program is undertaking the program in all the primary schools in the district. This program involves feeding pupils in primary schools. Each primary school is expected to fulfill the following requirements before accessing the food items which includes posho, beans, oil and sugar:

- Well ventilated kitchen
- Energy serving cooking stove
- Recruited cooking staff and watchman
- The kitchen should not be across a road near the school.
- The cooks should have undergone medical check-up

However, these conditions initially eliminated some schools from accessing the food items.

Education department does the overall administration of the program, DDHS ensures hygiene in schools, and forestry department/ ACORD provides seedlings for woodlot establishment in the schools while environment department does regular environmental auditing and supervision in the schools.

Impacts

The school feeding program is expected to have the following impacts on the community and the physical environment:

Improved health of the pupils
High retention in schools
Improved performance
Likelihood of intestinal upset
Fuel wood shortage.

Mitigation

Mitigation strategies should be designed to address, especially, negative impacts. Institutional woodlot establishment and regular check up by cooks and maintenance of proper hygiene should be encouraged in the schools. This should be done in collaboration with other relevant partners to enhance sustainability.

BACKGROUND DOCUMENTS:

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