PN-ACC-320

Consultancy Report

EIA STUDY

MASINDI DISTRICT ENVIRONMENTAL PROTECTION AND ECONOMIC DEVELOPMENT PROJECT.

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JULY, 1997

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ACRONYMS

ACDI	Agricultural Cooperative Development International
ADRA	Adventist Development and Relief Agency
CBOs	Community Based Organisations
DEAP	District Environment Action Plan
DEC	District Environment Council
DED	German Development Services
DEO	District Environment Officer
DLC	District Local Council
EIA	Environment Impact Assessment
EIS	Environment Impact Study
ELU	Environment Liaison Unit
EPED	Environment Protection and Economic Development
GOU	Government of Uganda
GTZ	German Agency for Technical Cooperation
IMD	Information and Monitoring Division of NEMA
KWR	Karuma Wildlife Reserve
LC	Local Council
MFNP	Murchison Falls National Park
MNR	Ministry of Natural Resources
NEAP	National Environment Action Plan
NEMA	National Environment Management Authority
NES	National Environment Statute
PMAC	Park Management Advisory Committee
TOR	Terms of Reference
USAID	United States Agency for International Development
UWA	Uganda Wildlife Authority
WB	World Bank

1 0 INTRODUCTION

1 1 Background

Masindi District was part of the old Bunyoro District which also comprised of the current Hoima and Kibaale Districts It is located in the northern most part of the western region of Uganda, shares its borders with six other districts, and the Democratic Republic of Congo lies to its west Masindi is a relatively sparsely populated district whose significant proportion of land is gazetted conservation area under a national park, forest and game reserves Partly due to the country's past political history and a number of other factors, the district is generally undeveloped Social and physical infrastructure is inadequate or in poor state, household economy is highly dependent on subsistence agriculture and, poverty is the main hardship faced by many families Although land cover in most parts of the district can be described as still ample, there has been encroachment on protected areas such as the Karuma Wildlife Reserve (KWR) and Budongo Forest Reserve Poverty, insecurity of land tenure and institutional constraints have been cited in various fora as the main causes of encroachment on protected areas

1 2 Project Outline

EPED project is a 20-month pilot landuse program with voluntary relocation of up to 125 families from KWR which lies to the south of Murchison Falls National Park (MNFP) Villages in KWR from where some families will be selected for resettlement are Rwamudompyo, Kigangara, Mpumwe, Kitengure and Kibyama There are over 530 families in the game reserve but only 125 will be resettled by this project Working closely with the district authorities, the project has acquired one thousand hectares of unoccupied and fertile land for the relocated families This land will be surveyed and each family allocated an eight-hectare parcel for its own and exclusive use This land is found in four neighbouring villages of Hanga, Kiruuli/Kimina, Kiruuli/Kitengure and Alimugonza which have been hitherto sparsely populated areas

The project goal is to lay the groundwork for the long term protection of MNFP and Karuma and Bugungu Wildlife Reserves Its purpose is to develop and test effective measures for the reduction of the root causes of biodiversity degradation namely the illicit use of protected resources by a neighbouring subsistence population In order to achieve the above, the main activities under this project include

- Resettling part of the population currently living in the KWR in the land provided by the district authorities
- Providing social and physical infrastructure in the host areas such as opening up about seven access roads, grading some and rehabilitating bridges, construction of boreholes, construction of resettlement centres (one in each village), and health services

- Promoting sustainable land use practices by providing economic development assistance to the resettled communities, improving land tenure system by aiding families to secure land titles and increasing food security through improved post-harvest handling and marketing of maize, the primary commercial and food crop

- Assisting Masindi District with its institutional capacity building in order to handle decentralized planning and management of the environment at local levels

1 3 Project Objectives

The key objectives of this project are to

- strengthen the capacity of Masindi District to effectively plan and manage its resources and stimulate sustained environmentally sound economic growth,

- assist the district establish the basic conditions for long term protected area integrity by implementing environmentally-sound and economically sustainable land use systems and,

- initiate pilot economic activities to increase income of rural population in sub-counties adjacent to protected areas

1 4 About this Report

This document sets out the results of the environment assessment process carried out on key project activities Following this introduction, chapters 2,3 and 4 describe the legislative framework, resettlement history in the country and the current state of the environmental resources within the study area respectively The identification and evaluation of impacts, both positive and negative, on environmental resources within the study area are addressed in Chapter 5 Where significant negative impacts are identified, mitigation measures are proposed in Chapter 6 Analysis of alternatives is carried out in Chapter 7 while details of environmental monitoring and management requirements plus inter-agency coordination are described in Chapter 8

1 5 Environment Impact Assessment Methodology

In accordance with USAID Environmental Guidelines for Small-Scale Activities in Africa and the Republic of Uganda Draft Guidelines for Environmental Impact Assessment (NEMA, 1996), the following general approach was adopted as a basis for the assessment

(i) Determination of policy, legal and administrative framework and requirements through identification of legal documents, guidelines and planning procedures These were reviewed in order to ensure that necessary measures were included in the design and implementation of the project to meet the appropriate requirements

(ii) Determination of details of project components, as well as construction, maintenance and operational activities (including those taking place off-site) associated with the project, in particular those which could have implications for environmental resources

(iii) Determination of current and anticipated environmental baseline conditions through review of existing information as well as field survey to establish potential receptors, their location and sensitivity

(iv) Where potential impacts were identified, evaluation of both their positive and negative environmental effects was undertaken as follows

- identification of impacts associated with anticipated activities and project components (see ii above),
- identification of potential receptors determined through the baseline study and consultations,
- identification of areas where effects are anticipated (i e where there are both impacts and receivers sensitive to these impacts) For example, the effect of dust and noise during access road construction will not be significant if there are no receivers in the vicinity but may be significant in heavily populated areas For each environmental impact, there may be a range of environmental effects which need to be considered,
- evaluation of significance of impacts For many environmental parameters, the overall impact will depend on the spatial relationship between the source and the receptor Impacts will also depend on the characteristics of the receptor, as some will be more sensitive to an environmental component than others

(v) Analysis of alternative options and the "do nothing" scenario and comparison of environmental consequences associated with each

(vi) Where impacts can be reduced to acceptable levels through the incorporation of practical and cost-effective measures, these have been identified A mitigation plan of such measures has been prepared

(vii) The current environmental management infrastructure was reviewed and recommendations made regarding the need for establishment and expansion of such facilities and, if necessary, staff training

(viii) An environmental monitoring plan was developed outlining the nature, frequency, location and methodology of monitoring that should take place during implementation of various components of the project

2 0 ENVIRONMENTAL POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2 1 Environmental Management in Uganda

Due to political upheavals that characterised the post-independence period until 1986, no new policy or legislative instruments were put in place to promote sustainable development in Uganda Specifically, environmental management issues had been relegated to the background on the pretext that Uganda is well endowed with abundant natural resources For example, it was not until 1987 that a ministry in charge of environment protection was established From then, a number of developments have taken place in the bid by the Government of Uganda (GOU) to use and manage environmental resources on a sustainable basis

One such development has been the National Environment Action Plan (NEAP) which was embarked upon in 1990 with assistance from USAID NEAP was given the mandate to recommend policy and legislative actions, institutional strengthening guidelines and potential investments with the main objective of putting in place a sustainable national development strategy For instance, with NEAP's guidance the Ministry of Natural Resources (MNR) formulated a National Environment Management Policy Strategies of this policy are intended to provide and assist decision makers and resource users in determining priorities in the national context and also at the sectoral, private sector and individual levels One of the strategies to assist in implementing this policy was to establish the National Environment Management Authority (NEMA) NEMA is now the principal national agency to coordinate management of the environment This was achieved through the National Environment Statute (NES) in 1995

2 1 1 Management at national level

The post-1986 era in Uganda has been associated with more development programmes and an average economic growth rate of over 6% per year This trend necessitated directing national development efforts to ensure that plans aimed at improving the standard and quality of life take due consideration of environmental concerns First, it was the Ministry of Environment Protection in 1987, then the Directorate of Environment Protection in 1993 and now, it is NEMA in charge The main role of NEMA is to supervise and coordinate all matters relating to the environment in Uganda It is under the general supervision of the Minister of Natural Resources who is also a member of the committee which provides and coordinates environmental policy guidelines NEMA is headed by an Executive Director who is also an ex-officio member of the board that oversees the implementation and successful operations of the policy and functions of the Authority

NEMA is made up of four divisions one of which is the Information and Monitoring Division (IMD) whose primary purpose is to ensure adequate surveillance and control of the environment and any related areas of interest to it Part of IMD's mandate is to ensure that environmental regulations such as EIA are complied with, environmental standards are set,

and an environmental monitoring system is put in place

At the sectoral level, NEMA works with lead agencies According to NES, a lead agency is "any ministry, department, parastatal agency, local government system or public officer in which or whom any law vests functions of control or management of any segment of the environment" In each sectoral agency, there is supposed to be an environment desk known as an Environment Liaison Unit (ELU) to act as a contact point for NEMA As with the districts, day-to-day activities of running ELUs is not the responsibility of NEMA but respective lead agencies

As can be deduced from the above, there is no provision for a structure to handle environmental issues at the centre i e in MNR Instead, all issues that are beyond the mandate of NEMA are pushed to the Policy Committee, whose chairman is the Prime Minister

2 1 2 Management at local level

In line with the national programme on decentralisation, NES provides for the transfer of environmental management responsibilities to districts, municipalities and rural communities at the grass roots Based on the guidelines that had been provided during the NEAP process, NES gives a framework in which to manage the environment at districts and lower levels so as to be in line with the overall decentralisation process which is one of the current priority government policies

In summary, this was done to create an environmental management system that integrates and fortifies links among all levels in the districts (LC V, LC III, and LC I), public sector and NGOs A number of environmental committees were recommended to constitute district and local level institutional arrangements First, there is the District Environment Committee (DEC) whose main objective is to coordinate the activities of the District Local Council (DLC) relating to the management of the environment and natural resources and, ensure that environmental concerns are integrated in all plans and projects approved by the DLC On the advice of the DEC, a local government system may create Local Environment Committees (LECs) whose main responsibility is to prepare local environment work plans which are consistent with the NEAP and District Environment Action Plan (DEAP)

Environment related activities in districts are facilitated by District Environment Officers (DEOs) who are direct employees of respective districts Among other duties, a DEO is supposed to serve as Secretary to and advise the DEC, liaise with NEMA on all matters relating to the environment and, assist LECs in the performance of their functions as provided for in NES

All these structures are supposed to be part and parcel of the district local government system and not NEMA They are supposed to be in place so that coordination between NEMA and districts is easier

Together, both the Local Government and Environment Statutes provide for the transfer of "real power" to districts and lower levels so that decision making and budgeting are realigned to suit district priorities As a result, the capacity of local authorities to plan and manage delivery of services to their people while ensuring sustainable use of the environment in its broadest sense is expected to improve

2 2 Summary of Relevant Legislation and Guidelines

In order to ensure that the post-1986 dimension of looking at the environment in Uganda succeeds, a number of legislative instruments and guidelines have been prepared and are being implemented An outline of relevant ones to this study and/or project is given below

2 2 1 The Constitution

Among other things addressed by the new Constitution, land related issues were given high priority Although what is stated in **Articles 26** and **237** of the same Constitution cannot be described as "land reform actions", it is, however, a very big stride along the right direction **Article 237** vests all the land in the country to the people, while **Article 26** prohibits forceful seizure of individual property including land by any authority public or private without adequate compensation This has instilled a sense of security of tenure in most Ugandans especially those who have been squatting on public or other lands

2 2 2 The national EIA guidelines

NEMA is still developing EIA guidelines, draft copies of which are available and provide a brief summary of their requirements These guidelines are not yet in force because they still require legal backing by Parliament Developers are, however, encouraged to undertake EIA studies after consulting NEMA There are a number of stages one goes through before one is allowed to proceed with the proposed development

2 2 3 Others

Other policies, laws and guidelines which are highly relevant to this project include but are not limited to

- The Wetlands Policy, 1995
- The Water Statute, 1994
- The Local Government Statute, 1993
- The National Environment Management Policy, 1994
- The National Environment Statute, 1995

2 2 4 Environmental standards

According to NES, NEMA in consultation with respective lead agencies is responsible for establishment of quality standards for air, water, effluent, noxious smells, soil, noise and any

other standards deemed necessary However, due to the short time NEMA has existed, none of these standards have been fully developed First draft standards on air, water, effluent and noise have been prepared, but even then, they will not be readily available for use soon Soil quality standards will be available much later

2 3 Responsibilities and Practical Problems

The whole NEMA establishment is in place but still has a lot to accomplish because environmental management and planning in Uganda is relatively a new phenomenon The Environment Policy, NES and NEMA are all new and so is the decentralisation process NEMA is expected to improve environment management practices in the country without taking over the duties of lead agencies

Initially, some practical problems emerged in the institutional and legal framework For instance, the Ministry of Local Government had to amend the Local Government Statute of 1993 in order to accommodate DEOs who were originally not direct employees of districts They were, however, provided for by NES although NEMA does not have the mandate and means to deploy permanent staff anywhere outside its Kampala headquarters On the other hand, MNR which is the parent ministry of NEMA does not have any structure to take on such responsibilities because all environmental issues are supposed to be handled by NEMA Recent pronouncements by the Prime Minister which reflect the government position on the same issue have eased the tasks

Some districts up to today do not have DEOs and by the time of this study, Masindi District did not have one either, although plans are underway to recruit one This means that all other structures established to manage use of the environment at various local levels are also missing

ELUs in sectoral agencies are faced with operations-related constraints such as financial and logistics

2 4 Agencies with an interest in the Project

There are a number of agencies with varying degrees of interest in this project and some of them have been consulted as part of the EIA process They include ACDI-VOCA, NEMA, USAID, UWA, GTZ, DED, LC System, Masindi District Administration and the local CBOs

3 0 RESETTLEMENT HISTORY IN UGANDA

3 1 Introduction

For the purposes of this study, resettlement schemes may be defined as *projects involving planned and controlled transfer of population from one area to another* This definition has been adopted because there are cases in which there is spontaneous, uncontrolled movement of people to find new homelands, which, of course, has been and still is the most common solution to problems of population pressure This type has often been termed "unassisted settlement"

In the past, a continuing interest in resettlement schemes was derived from three related aspects of Uganda's economy the existence of large areas of uninhabited but fertile land, the ideal habitat for various species of tsetse fly presented by many of these empty areas, and the differential rate of population growth between inhabited areas, leading to relative overcrowding and in some cases to the threat of serious soil erosion Resettlement schemes, therefore, were concerned with transforming the system of agricultural production and with relieving population pressure Of recent, wars and civil strife plus natural calamities may be added to the list of circumstances that lead to the need for resettlement schemes

3 2 Earlier Resettlement Schemes

The concept of resettlement schemes in Uganda developed in the early 1940s but most of them were not very successful as can be evidenced from the few examples give below Based on a ten year development programme to speed up the economic development of Uganda by Dr E Worthington in 1946, large scale resettlement schemes each of which would embrace an area of some 500 square miles were suggested Worthington anticipated the eventual settlement in South Busoga of some 6,000 families, each with fifty acres of cultivable land (with mechanical assistance) Actual work on Busoga Farms Scheme began in 1949 but with a lot shortcomings The programme had omitted any detailed estimates of where settlers in sufficient numbers were to come from and which crops would offer a reasonable rate of return on the large capital investment After an investment of 135, 000 pounds had yielded a loss of 100, 000 pounds and 750 acres of cleared but almost valueless land, the scheme was finally wound up in 1954

The second major attempt arose from the serious consequences of increasing population pressure and land fragmentation in the hilly relief of the then Southern Kigezi District After soil surveys had been made in northern Kigezi and adjoining areas of Ankole, resettlement began in Kinkiizi and Rujumbura counties of the current Rukungiri District in 1946 By 1950, a total of about 16,500 persons had been resettled in northern Kigezi In the same year, arrangements were made to extend the resettlement area to Igara County in adjoining Ankole By end of 1954, the total number of assisted Bakiga settlers had swelled to 25,000 persons However, when the emphasis shifted to areas in Ankole, which were regarded with much less favour by the Bakiga owing to the greater distance from home, the number of assisted settlers declined considerably By 1953, concern was once again being expressed

at the possibility of serious soil erosion in south Kigezi implying that after seven years, the main objective of the scheme had not been realised The scheme had partially succeeded

Other activities which may be classified under resettlement during this first period include small-scale schemes in Amuria County now in Katakwi District and in Karamoja A team of Arab technicians were brought from Aden to construct irrigation works However, an unfortunate series of events such as excessive floods and long droughts afflicted the schemes The schemes concerned appeared to have lapsed around 1955 after having been described by the Director of Agriculture as "not capable of wide practical application"

Round about the same time, establishment of resettlement schemes in Bunyoro (of which Masindi district is part) was tried as part of the campaign against the tsetse fly These schemes also failed mainly because they lacked people to resettle Bunyoro was too far way from the densely populated areas such as Kigezi, while attempts to attract local settlers from Bunyoro were naturally rather unsuccessful The Maragoli and Kitoshi peoples had to be brought at high cost from Western Kenya

In Bunyoro, the intended plot size was 20 acres which seemed too large an area for one family to clear of bush, with the result that there was always a habitat in which the tsetse fly would survive or through which it would advance

3 3 Recent Schemes

As pointed out in **section 3 1**, most current resettlement schemes are for displaced people Such people are forced out of their homes by circumstances beyond their control These circumstances could be drought and famine, earthquake, floods, civil conflicts, wars, evictions from land that is legally not theirs or by development projects Examples of schemes arising out of such factors in Uganda include Bugangaizi in Kibaale District (forceful evictions from a protected area), resettlement schemes in Gulu and Kitgum Districts (wars), and Dodoth County in Kotido District (famine after prolonged drought) Of all the recent resettlement schemes, only Bugangaizi will be assessed because of its relevance to the EPED Project

The new settlers in Bugangaizi are a result of forceful evictions from Kibale Forest National Park (formerly Kibale Forest Reserve and Game Corridor) by Uganda National Parks (now UWA) in March, 1992 It is estimated that about 30,000 people were evicted from that protected area The majority of the evicted people were Bakiga who, in the 1960s had settled in counties neighbouring the national park in the then Toro District, following a deliberate government policy to encourage unassisted resettlements in less populated areas After eviction, most of the affected people were scattered all over Kabarole and Kasese Districts After a series of high level government contacts, the people of Bugangaizi County offered land in the sub counties of Nkooko and Narweyo for resettling those displaced from the National Park

The resettlement exercise was handled by a joint committee which composed of government officials and some NGOs which had pledged to assistance to the scheme Notable among the NGOs was Oxfam, ADRA, World Food Programme, World Vision, and the International Organization for Migration (IOM) The size of the plots of land given to the resettled families were not uniform because they depended on land availability Unfortunately, it was not possible to get adequate information on indicator plot sizes from OXFAM

Because there were no prior arrangements and everything was done in haste, the whole resettlement scheme was immediately beset by numerous problems In the first place, not all the displaced persons were resettled with the shortage of land Secondly, those who were given land complained that it was too small to cater for their families and that it was less fertile too Other problems included

- slow pace of allocating land to families which caused acute food shortages,
- inadequate safe water supplies, educational and health facilities,
- poor accessibility due very bad roads,
- frequent sicknesses,
- poor housing, sanitation and waste disposal management,
- the land allocation system did not consider kinship ties and this severed physical family ties, and
- abject poverty in the resettled areas

Due to these and other problems, some settler families started abandoning the scheme without the knowledge of the resettlement committee According to OXFAM which provided relief supplies to the displaced people at the peak of the problem, low key desertion is still going and no one seems to know where these people are going

3 4 National Resettlement Policy

Uganda is increasingly experiencing a number of natural and human-induced disasters which result in the displacement of people and the need to resettle them thereafter But each time such an emergency occurs, the country is always caught unprepared and/or ill-equipped to act appropriately During such situations, all the institutions whose line of duty connects them to such emergencies begin to panic and end up delaying to take action Meantime, persons involved are suffering and government calls to NGOs and international agencies for help intensify Cases of this nature in the country are many and include the current famine threat in eastern Uganda, the earthquake in Kabarole and Kasese districts, insecurity in Gulu, Kitgum and Kasese Districts, recent influx of refugees from southern Sudan and Rwanda, just to mention but a few

All this and more inadequate organisation, especially within the public institutions during crises is caused by lack of an elaborate national policy and institutional framework in so far as handling of emergency issues is concerned An adequate machinery is needed to forestall disaster arising from displacement A technical department, well equipped with an up-to-date functional information database, skills on relocation and budget is necessary The present

adhoc attempts are not good enough because they are not sustainable and no useful experiences are learnt from them by new crises

The government, however, has taken some actions in recognition of the constraints encountered when dealing with displaced people In 1995, GoU set up a survey on this issue which recommended that an ideal resettlement programme should not only include compensation and handing out a few blankets, but should be all embracing, encompassing multi-sectoral components The study puts emphasis on coordination and integration of the settlers, host communities and multiple of agencies with interest in the schemes The survey deals with policy, legal and institutional framework issues and recommends that a permanent Commission to handle resettlement be established under the Office of the Prime Minister or higher office but not a line ministry

3 5 The Masindi District Resettlement Plan

This plan was developed by the District Resettlement Implementation Committee purposely for the EPED Project The life and/or functions of this committee after the project are not yet decided upon The plan was put together in order to develop strategies aimed at restoring the social and economic base of settlers while indirectly assisting host communities It was reviewed and the following comments made

3 5 1 Baseline information

This section of the plan provides quite a comprehensive source of baseline data on the project area and Masindi District as a whole It would be a great investment for the district in environment management if all that data were developed into an information database Once functional, it would specifically be used for monitoring of the resettlement scheme performance and other interested users Periodic up-dating would be required, however, the district has recently received an environment profile and state of the environment report which could introduce a new way of looking at issues in the district

3 5 2 Policy and legal framework

According to the plan, EPED Project will not get involved in compensation or provision of relief food to the settlers in the transition period In collaboration with UWA, settlers were allowed to keep their old gardens in KWR until crops in the new gardens are ready, on condition that no new areas are opened up in the reserve However, most families which have already moved to the new areas are facing acute shortage of food, which ultimately, will slow down the pace of resettlement activities
This situation was found to be one of the constraints likely to affect the rate at which the newcomers get fully settled in the new areas Causes of food shortage include

- long distance covered to collect food from old gardens in KWR - it takes a minimum of two days to walk and come back,
- vermin and termites which destroy crops in the new areas,

- high incidence of diseases especially dysentery and eye infections,
- a lot of time is wasted in search for water and food so that less time is put in gardening,

For these reasons, the project may consider providing some relief food to families for a certain period of time to at least convince families to move quickly Members of some families have not yet moved from KWR completely or have gone back for fear of starvation

There is need to incorporate other pertinent issues in the resettlement plan so as to minimise future development problems Issues connected with housing quality, public health and energy are too important to ignore at this stage Once done, the quality of life around homesteads would improve and set a good example to the hosts This activity can be carried out without necessarily incurring more expenses if it is tied to other on-going programmes eg health

3 5 3 Development plans for resettlement areas

Integration of environmental, social and economic aspects is given priority in the plan More specifically, the idea of providing an average of 4 ha in every resettlement village for public and social use was a move along the right direction However, the question is whether this integration will be done successfully Some of the reasons for this suspicion are related to the project budget and timing

It should be noted that such an integration is long term and cannot be achieved within a short time nor can it be sustainable if everything is carried out in much haste For example, all the settlers must be fully sensitised about living close to the national park without necessarily becoming poachers and to achieve this, sustainable alternative sources of income and employment have to be availed They have to learn how to live on, and use a specified piece of land unlike before In order to do all the above, more time and resources are needed but it seems that in this phase, the project does not have either, while the district authorities are not yet in position to take over and continue to run all activities when the project ends

3 5 4 Shifting arrangements

Shifting of families from KWR to the resettlement areas is going on well and in some places like Kimina/Kitengure, all the 28 settler families have already moved The project assists by transporting them from KWR and providing them with plastic sheeting for use as a temporary roof material However, as pointed out in **section 3 5 2** above, most settlers have found it difficult to cope in the new areas given the constraints they are faced with, more specifically food shortages

If possible, the project should reconsider its policy of *"no maintenance arrangements to the settlers during the transition period"* Some kind of *"short term relief support"* especially in food terms during this time is highly recommended If not, progress of the resettlement scheme is likely to be adversely affected because, families will only be able to completely

shift after only be shift after the harvest seasons as is the procedure now If this option is preferred, the project will likely come into conflict with UWA policies Probably, this has not happened yet because the latter is experiencing some institutional capacity constraints

3 5 5 Budget and financing

During the project formulation, it seems that a number of issues that have arisen in the implementation phase were not anticipated and/or, therefore, not budgeted for And yet, these issues some of which have already been outlined above are so crucial that the success of this project partly depends on them Although some priority issues originally not included in the financial estimates such as health and shelter have been accommodated, there is need to consider others including relief food If not now, extension of the project may be considered

3 5 6 Other observations

Although the resettlement plan lacks explicit monitoring and evaluation plan and procedures, this may not pose a big problem This may be offset by periodic baseline and repeat surveys aimed at households in the host villages by EPED in case it is extended or its successor institution In this way, site-specific indicators will be developed over time and would be used in any monitoring and/or evaluation procedure in the project area

Another observation is that the plan does not address some outstanding and long term issues related to this project For example, it does not offer any options on how the district would deal with what the EPED Project will have put in place when it ends It also seems to have ignored the problem of the families which were not resettled by this project and are still living in KWR Most of them are close relatives of those who were resettled, which might pose operational constraints to both the project and the district Those families still in the reserve have to be considered before they are forcefully evicted by UWA If they are, they may have no option but to join their relatives who were resettled by the EPED Project

4 0 ENVIRONMENTAL BASELINE

4 1 Introduction

This chapter describes the baseline conditions in the villages in and around the southern and eastern borders of the protected area They include Kitengule, Rwamudompyo, Kigangara and Mpumwe It provides information on the physical, biological and socio-cultural environment Evaluation of the environmental impacts of the proposed activities as described in Chapter 5 was carried out based on this baseline

4 2 The Physical Environment

4 2 1 Climate

Masindi District receives a mean annual rainfall of about 1200mm and is bimodal The highest peak occurs in April while the second and lower peak is in October Rainfall distribution has a significant implication on other environmental parameters especially vegetation distribution the drier parts have fire climaxes of trees, thickets and grass savannas and in some instances vegetation cover is specific to the amount of rainfall received The distribution of rainfall plays a big role on the bearing of significant economic activities such as forestry and agriculture in the district

Mean annual maximum temperature of 26 3° C and a minimum of 16 6°C are experienced in the district The long-term mean monthly temperature variability for Masindi Meteorological Station over a period between 1931-1994 shows relatively high values during the dry season and lower values in the wet season of each year However, micro climates do occur in Budongo Forest and temperatures are exceptionally low at times

Relative humidity ranges from 92% in the mornings and falls to between 31% and 36% in the afternoons and this occurs frequently throughout each year This usually reduces the chances of rainfall However, in Budongo Forest, relative humidity values are usually high and rarely go below 60% throughout the day This leads to high chances of precipitation in the forest area which is usually the case

Masindi District experiences high rates of evaporation with a yearly mean of 1626mm Of the total land area of the district , surfaces vulnerable to evaporation occupy 10 53% These are wetlands and open water surfaces, where extensive evapo-transpiration occurs It also occurs in most large vegetation communities (e g sugar cane plantations and grassland communities)

The winds over Masindi area are controlled by the large scale monsoon flows The winds are strongly northerly blowing in dusty dry air from the arid and semi-arid areas to the north This is generally during the dry season with only occasional rainfall

4 2 2 Soils

The soils of Masindi district are widely varied and include vertisols which consists of black clays, sandy alluvials, and Kaiso beds which are occasionally lateritized The ferruginous tropical soils are mainly freely drained lithosols, which are soils without horizons Young and stony (bare rocks) ferrallitic soils are common which represent an almost final stage of weathering with little or no mineral reserve left The other types include alluvial and lacustrine sands and alluvial clays

The soils of Masindi district can be classified into 17 soil mapping units The parent rocks of these soil units are mainly precambrian rocks, underlying over 70% of the soil units of the district The cainozoic and alluvium rock types are restricted to areas along rivers and swamps which are not widespread in the district

The most important soil types in terms of areal coverage are Paraa and Rukiri complexes, Kigumba, Buruli, Hoima, Kitonya catena, and Bugangari, Bukora and Lubumba series, all of which cover over 75% of the district area

Other soils of significant coverage include Metu complex and Rukiri/Weiga/Wasa complexes The complexes mainly occur along Lake Albert shores

Soil productivity

The soils in most areas are fertile (red-loamy type) which is good for agriculture, and evidenced in the high crop yields that have been harvested Soils of high productivity potential contain essential plant elements (nutrients) and other factors contributing to crop growth and health, particularly moisture and rooting depth

Masindi soils are generally slightly acidic and productive The productivity level varies with each unit and the depth of the soils unit These units such as Rukiri, Kitonya and Kigumba are particularly very productive and consequently vulnerable to degradation processes However, with wise management and careful choice of crops, the soils can support a prosperous agricultural economy in the district There is a clear and urgent need for a master plan in soil and water conservation practices to support an agriculture-based economy

4 2 3 Vegetation

The vegetation of the project area can be generally described as Woodland This has been defined by *Langdale Brown et al (1964)* as Forest/Savanna Mosaic at medium altitudes This is characterized by a savanna-like vegetation consisting of forest remnants and incoming savanna trees and a grass layer dominated by elephant grass (*Pennisetum purpureum*) This is a result of partial clearing of the original forest and the influence of cultivation and grass fires where conditions are slightly dry In some areas the grass layer is dominated by *Hyparrhenia*, while in others the elephant grass is associated with deciduous trees especially *Combretum spp* The most common vegetation community is the *Sorghastrum* grassland and

Acacia-imperata savanna

The vegetation of Masindi district is as varied as the different ecological zones that characterize the area Several factors affect the vegetation distribution These include climate, soils, human activities, fires and altitude above sea level

The range of vegetation distribution in Masindi district lies between 670m and 1500m above sea level Vegetation zones range from the medium altitude moist semi-deciduous forest of Budongo, to swamps and communities with impeded drainage and post cultivation communities which are prominent on the hill slopes where intensive cultivation takes place

4 2 4 Wildlife

There is a wide diversity of habitats in Masindi District which encompasses major plant biomass namely tropical savannah, tropical woodlands, tropical deciduous forest, tropical evergreen forest and permanent swamps (*Shaun Mann, 1995*) This variability of the habitat enables the National Park and Game Reserves to accommodate complex communities of both vegetation and animals

Gazetted in 1952, MFNP covers about 4,040 sq kms while Karuma and Bugungu Wildlife Reserves cover 820 and 520 sq km respectively Budongo Forest also occupies a relatively large portion MFNP actually forms the northern most part of Masindi district along River Nile KWR adjoins to the park on its eastern border and stretches to Bugungu Wildlife Reserve in the southwest Karuma Falls hunting area is now a communal wildlife area It is estimated that about 40% of Masindi District lies under protected areas

Over years, the expanding population of settlers started spilling over into the national park and game reserves These people were regarded as trespassers but were not harassed by the respective authorities The vegetation was cleared indiscriminately to give way to agricultural crops and quite often the annual animal migrations were disrupted as a result of these expanding settlements The wildlife reserves (buffer zones) are very important as far as facilitation of movements of animals for their survival is concerned They get fresh pastures when there is drought and can also get away from their natural enemies, including man

MFNP and KWR occur largely in Kibanda and Buruli Counties which cover the project area Bugungu Wildlife Reserve is located in Buliisa County, while Budongo Forest is in Bujenje County

The mammalian fauna of MFNP is considerably varied and the park is a home of 76 mammal species and 450 bird species These include Hippopotamus, elephants *(Loxodonta africana)*, buffaloes, hippos, Uganda kob, Jackson's hartebeest, oribi, Bohor's reedbuck, duiker, warthog, giraffe lion, leopard, hyena, and several other carnivores Other ungulates include topi, bush pig, sitatunga and the bush duicker Reptiles include the soft shelled turtle, crocodiles, the great plated Lizard and the Monitor Lizard (mostly in the Chobe

sector)

To the south of the Nile, Bugungu (520 Km^2) and Karuma (820 Km^2) wildlife reserves form a buffer between human habitation and the park In the Wildlife Reserves, Buffaloes, Bushbuck, Duickers, Waterbuck and Reedbuck are among the mammals found in the area Colobus monkeys and Baboons are spread throughout the woodlands

4 2 5 Problems associated with wildlife areas

Vermin pose a very big problem to the people of Masindi District who are basically small subsistence farmers Vermin include monkeys, baboons, porcupines and bush pigs The new vermin control law by UWA allows the people to kill the vermin, but this puts other animals in danger especially the primates which move in groups If poisoning is the method of vermin extermination preferred by the communities, then a large number of primates could be poisoned at ago The porcupine is in double danger because in addition to being a vermin, it is also killed for its meat

A lot of logging occurs in protected lands and this disturbances and change the ecosystem Primates, bats, birds, forest snakes and other species are also threatened

Bush burning is very common during the dry seasons and actually poses a very big problem which warrants more attention than is given todate It takes place between Nov/Dec - Feb/March period every year This period is so dry that fires ignite easily that one can easily see for long distances in all directions burnt out landcover including grass layer It is sometimes hard to imagine that the lush vegetation one sees during the wet season can degenerate to a sorry and burnt-out state during the dry seasons These bush fires control the vegetation climax and, therefore, the quality and quantity of biological diversity in the area

Hunting and pastoralism are the major causes of bush burning but it also seems that some people have to burn bushes during the dry season just for the sake of it or some other reasons not explicit

Poaching activities in the park are commonly started with setting deliberate fires In the wildlife reserves, the cause is also by encroachers who set bushes on fire as a form of bush clearing for establishment of their gardens as well as improvement of pastures for their cattle In Bugungu, approximately 600km of bushland is burnt annually in an unplanned manner This is incredibly destructive to woodlands and forest vegetation and fauna

Bush burning has encouraged poaching, as animals are attracted and easily snared in the burnt areas It also increases encroachment by cattle grazers as they too look for fresh pastures sprouting from the burnt areas

Encroachment is less serious within the park itself but intensive in the wildlife reserves In KWR, wildlife is experiencing severe pressure from human population expansion Worse

still, the presence of a refugee settlement at Kiryandongo where over 7,000 people have been settled, has intensified the problem

Within the reserve, there are about 660 people settled and carrying out various subsistence activities This has resulted in the collection of fuelwood for cooking and poles for building which is gradually leading to destruction of wildlife habitat

The existence of tsetse-flies in the district has caused serious land use limitations MFNP conservation area has various species of *Glossina* These include both woodland and riverine species This has led to low livestock densities in the areas adjacent to the MFNP conservation area because the tsetse flies are carriers of Trypanosomiasis Wild animals also act as " reservoirs " of the disease and constantly reinfect livestock Tsetse fly control was initiated in 1940s using many methods such as clearing of bushes along certain boundaries, chemicals like DDT and others Later, there was need for an integrated method, for example, use of massive bush clearing coupled with spraying and shooting of wild animals This was, however, criticized by fauna preservation enthusiasts as it led to heavy reduction of wild-animals in the past years The integrated method was later stopped and there is still a mass of flies in the MFNP conservation area

4 3 Social-Cultural Environment

4 3 1 The people

According to the 1991 Population and Housing Census, Masindi district has a total population of 261,000 people of whom 129,000 were female and 132,000 are male Masindi is designated as a rural district with 246,440 rural dwellers and about 14,350 urban people

Masindi District is an ethnically rich district with well over 56 (fifty six) distinct large and small ethnic groups The most dominant tribes are the Banyoro/Bagungu, the original inhabitants of the area who constitute about 60% of the total population

Historically, Masindi was officially encouraged by government policy to allow in migrants especially from West Nile region to work in the plantations Alur/Jonam who form 15% of the total district population live in Mutunda sub-county and are settled on the east side of the Kampala-Gulu Road boundary Other tribes in the district include Lugbara/Aringa who form 5 3% and Baruli who form 4 5% of the total district population Of recent, there are Acholi too Following this deliberate Government Policy to encourage migration of people from heavily to thinly populated areas of Uganda in the 1960s, Bakiga and Bahororo shifted from Kigezi to Kigumba settlement area too

However, quite a number of people moved to Masindi without government assistance and have permanently settled in the district Take for example, the Bagisu who dominate numerically among the encroachers They migrated to the district in the mid-1980s from Mbale District and the Mount Elgon area where there is land scarcity, evictions from the Mt Elgon National Park and violent incursions by the Karamojong also drove them from

eastern Uganda During the 1970s most of the settler people initially lived outside the protected area near Kikube in Kiryandongo sub-county They were, however, evicted and moved into the reserve when large tracts of land in the area were allocated to the army

Other groups in the area include Maragolis and Nandi who originate from Kenya and live in Kiryandongo Sub-county, Kibanda County These people were settled in the district in the 1950s and were initially employed in construction of the Gulu railway They number about 1,000 a few of which are encroachers There also Rwandese who are predominant in Kimengo Sub-county of Buruli County, Sudanese and Congolese in Kibanda County, and people of Somali origin also settled in Kibanda county

Furthermore, the 1991 Population and Housing Census revealed that the child population (0-14) was 46 2% while the working population (15-64) was 50 9% and the elderly population 3% of the total District population Consequently, the population is young and has a high dependency ratio of 96 6%

The overall male population is greater than that of female According to various censuses conducted nationally, the population of Masindi has been increasing steadily This could partly be attributed to a continuous but low key migration of various categories of people to Masindi from neighbouring districts and countries Considering the population projections by the Statistics Department, in 1996 the overall male population is 165,400 persons and the female population is 156,500 persons

4 3 2 Land use and land tenure

Land tenure is the socio-cultural mechanism which regulates the way in which land is owned, occupied and used This greatly influences the nature, character and quality of land resource conservation

The most important form of land tenure in the project area is Bibanja (singular-Kibanja) or customary tenure In this system, a single individual or family does not own the land outright but rather has cultivation rights on a plot of land

Households have user rights over their land and responsibility to utilize the land according to their wishes Individual household rights may only be terminated if the household ceased to cultivate the land or if members of the household became social outcasts and land reverted to the clan for reallocation Individual user rights are passed on to the next person through inheritance

4 3 3 Ways of access to land in Masindi District

The most common methods of access to land are inheritance, customary/communal ownership, land borrowing or by allocation after application to the local authorities after paying the necessary fees to LCs Various ways of acquiring land in the district include

- inheritance where land passes from parents to their children,
- outright purchase,
- allocation by government to individuals and organizations,
- communal/customary ownership where clans or communities control access to or exit from the land,
- borrowing by peasants from landlords,
- leasing from government and,
- squatting on a landlord's land with or without permission

There is unequal access to land by the different social classes which is a result of the amount of resources available to each group (capital for land purchase, tools or machinery for opening more land, ability to hire extra labour, etc) rather than lack of cultivable land Some of the existing means through which land is accessed confer some form of legal ownership while others do not

The majority of rural people in Masindi hold land on kibanja tenure basis as was the case during the colonial era However, during that time, some measure to protect the peasant producers had been put in place by the 1933 land reform Thus an individual had security of tenure on the land owned by the state But the 1975 Land Reform Decree made all people living on such land "tenants at sufferance" by making all land belong to the government The 1995 Constitution of the Republic of Uganda has, however, repealed that Decree and details of the new arrangements will be worked by the Parliament in 1998

4 3 4 Land use

Masindi district has an area of about 964,000 ha currently under the following uses

Table 1 Land use in Masindi district

Cover	Area in hectares	Percentage
Open water and swamps	87417	9 1
Forest reserves and plantations	103891	10 8
Mountains	12400	1 3
National Parks and Game Reserves	27150	2 8
Approximate area available for agricultural production	509263	52 8
Grasslands	223892	23 2
Total	964013	100 0

Source Masindi District Environment Profile 1997

About 76% of the district area is suitable for cultivation Apart from lakes, swamps, mountains and protected areas, for example, most of the area in Buliisa County on the fringes of Lake Albert below the escarpment is suitable for crop growing especially cassava

4 3 5 Settlement and housing characteristics

Masindi district has three designated urban centres of which the largest is Masindi Town Council The other two are Kigumba and Kijura The housing situation in these urban centres is very poor in terms of material and sanitary conditions

Rural housing is of very poor quality The predominant type is that where the wall material is of mud and wattle with a grass thatched roof This type of house comprises a frame of wooden poles covered with mud to make the wall while another frame of wooden poles and rafters covered with grass forms the roof Usually, there is only one opening for a door Ventilation is extremely poor as often there are no windows The other type of house found in the well-to-do rural families consists of a semi-permanent wall of burnt clay bricks of mud plastered with a mixture of cement and sand The roof is usually of corrugated iron-sheets Ventilation is provided by windows

On the whole, the housing situation in the rural areas is an environmental hazard It poses a health risk due to inadequate ventilation, storage facilities and poor sanitary facilities Very few homes have pit latrines while most of the families share their single roomed houses with their livestock especially goats and sheep

The main source of energy in the project area for both cooking and lighting is predominantly woodfuel Use of other alternative sources of energy such as electricity, wind or solar power and even petroleum products is very limited because are they in short supply In other villages where wood is far from homes, use of some agricultural residues like maize and cassava stems is becoming popular

Safe water supply is inadequate while the quality and quantity of ground water are not yet

known Major sources of water for domestic use include ponds, seasonal streams and a few boreholes and protected springs some which have been provided by the EPED Project The majority of water sources from which families get their supplies are not protected This puts people's health at risk, especially when it is recalled that many households do not have pit latrines

4 3 6 Social and physical infrastructure

Health facilities in that part of the district are so inadequate that use of herbal medicine and traditional healers are widespread Existing health units are very far and even then, some of them are not well equipped to deal with various illnesses or ailments For example, the average distance from villages in the project area to a good health unit is between 15 - 25 km away while Kiryandongo Hospital is even further which leaves Masindi Hospital as the most likely option since there are even no drug shops in the area

The education system in the project area is terribly underdeveloped and generally disappointing There are very few schools to cater for all the school age-going children Older children are the ones able to go to school because of the long distances involved Physical structures are poor, scholastic materials are lacking, and qualified teachers are scarce in the area With introduction of universal primary education by government, the situation is going to worsen

Accessibility to the communities in the project area in so far as roads are concerned is extremely poor Tractors and very strong 4-wheel drive vehicles can manage to go through the existing tracks or footpaths and only in dry seasons During rainy seasons, even these vehicles may fail Trucks transporting produce very often get stuck and even damage the road further When the situation is so bad, produce is usually transported on bicycles and heads to markets such as Kiryandongo This is the time when prices of produce go down to incredibly low levels The locally made wooden stretchers are used to transport the sick or expectant mothers to distant health centres for treatment

5 0 ENVIRONMENTAL ASSESSMENT

5 1 Introduction

This chapter identifies and evaluates the potential environmental consequences of the EPED Project activities The main activities of the project are resettlement and road construction Both direct and indirect impacts on the physical, biological and socio-economic environment will be assessed

5 2 Resettlement Related Impacts

5 2 1 Positive impacts

- **protection of biodiversity in protected areas of MFNP and KWR among others**

The evacuation and relocation of illegal settlers from KWR will help the area to recover and revert to its original form which will be beneficial to the flora and fauna in the ecosystem The animal population in the southern sector of MFNP which has hitherto been very low is likely to increase over time A similar effect will be experienced in KWR too

- **tourism opportunities**

With rejuvenated numbers of animals, birds and other forms of life in MFNP and KWR, tourism will more likely be boosted as there will be more to see than before With the current policy of UWA encouraging sharing of benefits between communities living around protected areas and itself, settlers and hosts will gain a lot from increased tourism activities

- **accessibility to formerly difficult but potentially high productive areas**

Locating the resettlement scheme in an area so remote like it is will benefit the host and settler communities, and UWA The latter will carry out its monitoring activities much easier than before while market for people's produce will be readily available By end of June, 1997, the price of dry maize had increased tenfold from a mere 50/= per kilo to 500/= in villages which were easily accessible The villages where the relocated communities have been settled are likely to improve in accessibility and also act as important produce buying centres Consequently, both the relocated and host communities will most likely benefit from the favourable grain prices This is but a beginning

- **general development especially in social and physical infrastructure**

Currently, resettlement (host) areas are generally and relatively undeveloped in all respects However, this is likely to change gradually in a positive direction after all project activities have been implemented Areas likely to gain much include health, housing, primary health care, domestic water supplies, accessibility, education and social well-being of the communities in and around the scheme

- **changes in household incomes**

Once settled and all the proposed social and physical infrastructure in place, household incomes are likely to improve With cheap labour available and improved accessibility, settlers will be able to increase their total production and sell their produce at relatively better prices than before They are also likely to be willing to invest in their land with a lot more confidence unlike when they were squatting in KWR Security of tenure is likely to stimulate the smallholders' investment in soil and water conservation, which in turn will be translated into increased agricultural production and household incomes

- **improved accessibility to safe water by households**

Most water sources are unreliable especially during the dry season and distances to the nearest water source differ with a number of households located far from the existing water sources
New sources of water were identified in the resettlement areas Existing boreholes have been repaired and new ones sunk immediately to ease chronic water shortages People are happy to move to their new land, especially where safe water is available within a reasonable distance This, will more probably reduce prevalence of water-related diseases thereby improving people's health

- **district institutional capacity to improve in due course**

By end of the project, the district is expected to have acquired capacity to take over from the EPED Project and proceed with whatever activities would be remaining This is because the project is currently being implemented in collaboration with various departments in the district However, this is not likely to be achieved within the current project life because the district lacks appropriate structures to rely on For example, it does not yet have an environment officer, a district environment committee or local environment committees as provided by the National Environment Statute of 1995

- **improved land use practices**

Demarcated plots give the settlers the psychological assurance that land is really available to them Land use planning and management will be given priority by every member because it is a family treasure Improved housing and sanitation are the two major aspects to be boosted by the security of tenure

- **cheap labour**

With an increased population in the host areas, cheap labour is likely to be available which will boost the agricultural sector Since both hosts and settlers are still on very good terms, both communities will gain The expected rise in the price of food stuffs will mean that households will get more and higher incomes unlike today

- **cultural integration**

Traditional ways of life of all peoples involved in this scheme will eventually change due to closer, frequent social and economic interaction Consider for instance, methods of drying crops Settlers store harvested crops on racks and cover them with grass outside the house while the indigenous dry crops by spreading them on bare ground in the courtyard or on mats This environment may be conducive for appropriate technology development in the resettlement scheme

- **effects of vermin on agriculture and general food security**

Vermin, especially baboons and wild pigs are a menace in villages neighbouring protected areas It estimated that between 75-100% of crops is lost if fields are not guarded, while 25% is lost when efforts are made to guard the gardens This is a cumbersome task given the fact that most families are subsistence farmers whose average holdings is about 1 2 ha (3 acres) Now that there will be more people in the area than have been, vermin may be contained to some extent through joint vermin control efforts Risk of attack on individual fields will also be spread

5 2 2 **Negative impacts**

These are more likely to occur when short-term emergency relief and long-term development activities are not concurrent Short term resettlement activities are of little use if communities are not provided assistance to rebuild their capabilities to become self-sufficient Following are some of the major ones

- **loss of biodiversity**

Loss of vegetation is one of the major adverse consequences likely to be associated with the resettlement scheme With increased population numbers in the resettlement areas, there will be an increase in the demand for fuelwood for domestic energy supply More land will also be cleared of current vegetation cover for agricultural purposes too However, it should be noted that in the long run, this adverse impact will not entirely be caused by the EPED Project The resettlement area constitutes part of the "remaining free lands" bordering protected areas and the process of acquiring them by various groups and people is still going on Even if the Project had not acquired them, they would still be settled in the long run and loss of biological diversity would ensue

- **competition over scarce resources in resettlement areas**

Negative impacts due to incoming settlers include food shortage, lack of shelter, household necessities and acute competition for the available water

- **inadequate food supplies**

A short term acute shortage of food will be experienced in the period between shifting and when the first crop in the new areas is ready For this reason, some members of families especially the aged and children, may not move to the new areas until they are assured that there is enough food This will definitely affect progress of the project activities

- **social stigmatisation and marginalisation**

Though not very evident now because the host communities are gaining, it is likely that in the long term there may be some social conflicts between settlers and the hosts A good example is the current conflict between the indigenous Batoro and settler Bakiga in Kabarole District It is happening after over thirty years However, this level of social conflict is not likely to be reached in this particular scheme because majority of the settlers and hosts are not the indigenous Banyoro or Bagungu They are all "outsiders" and are therefore likely to cooperate in order to live harmoniously

- **over-use of the plots of land provided by the project**

In the short term, this is not likely to be a problem because 8 ha per family is quite a lot of land in an area where average holding size per family is 1 2 ha With time, population of the original families will naturally increase and may lead to land fragmentation On the other hand, there may be an influx of people from areas to the scheme due to better services provided Either way, this population increase may lead to accelerated land degradation and abandonment of the scheme

- **separation of extended family members**

Because most of the encroachers some of whom will be resettled are "foreigners" in the district, members of their extended families tend to have strong kinship ties among themselves They care for one another and are always supportive to each other in times of need Some of these ties were, however, physically severed during the relocation exercise Some members of the families eg elder sons are still in KWR while their fathers were resettled This was because land in the resettlement area was not enough for everyone This may force some people to abandon the resettlement or encourage overcrowding in the resettlement scheme Some people may even opt to sell their plots in order to go and buy elsewhere so that they can re-unite with their relatives wherever they would be

- **dependence syndrome**

Without self-sufficiency, the beneficiaries may become overdependent on donor assistance

5 3 Access Roads Construction and Bridge Rehabilitation Related Impacts

5 3 1 Direct impacts

- **land take**

Some land will permanently be lost to road widening and other related improvements Such land will mainly involve cultivated or fallow land The cultivated land affected will mainly consist of maize, bananas, big trees (natural and/or planted) and some gardens of pulses such as beans, peas and groundnuts which are usually inter-cropped with cassava or millet However, land which will be taken permanently for those reasons will not be much This is because the opening will be done on the existing footpaths and/or tracks For a bigger part, most of these roads will not pass through homes because the areas is sparsely populated

There will be no compensation involved in this programme for either permanent or temporary land take The people affected are quite happy with that arrangement because they take it as part of their contribution to the success of the EPED Project

- **borrow pits and quarries**

Since grading takes a small part of the roads construction programme, the need for gravel will not be high If there is need, there are some existing borrow pits along the Pakanyi-Kiryandongo road which could be used Even then, the amounts of gravel required by access roads is not much There is completely no need for quarries in this programme

- **spoil materials**

Deemed to be of less significance, enormous amount of spoil may be produced during construction especially during the widening process Some areas through which the roads pass do not contain good gravel whose borrow pits could be used for disposing off the spoil Should such cases happen more often or if there is any surplus spoil after use, its disposal may render some land (where it is disposed) ineffective in the short term

- **pollution of watercourses**

During the construction phase, there are a number of possible sources of watercourse pollution Predominant among these are the inevitable loose soil and gravel that will lie on and adjacent to the roads Debris from drainage structure repairs are likely to be dropped into watercourses during the works but is likely to be solid and easily removable thereafter The possibility of fuel and oil spillage from the single bulldozer which widening existing roads and paths is very limited Specifically, care should be taken when works are going on near the following rivers Tantala I & II, Waiga on the way to Alimugonza and River Nyakarongo

- **effects on drainage**

The only work to be undertaken is to clean out culverts which are blocked, replace old ones and lay new ones on river crossings that did not have them before This should have no negative effects on the cross-drainage although watercourses may be contaminated by debris

Where new culverts are to be placed, the drainage direction, flow and volume of water may be affected Ultimately, this may alter immediate micro-ecosystems of the localities where a new bridge or culvert will have been placed Overall, this is not likely to a significant impact on the environment

- **erosion of earthworks slopes**

For most of the roads, slope destabilisation, erosion and sedimentation are not considered significant potential impacts

- **construction camps, traffic and road bypasses**

There will be no high level construction works involved during the exercise and the only activity will be opening-up access roads This means widening existing footpaths and/or tracks by removing stumps, anthills and rock outcrops Construction traffic includes just a bulldozer, a grader and two trucks Road bypasses will not be needed for obvious reasons A total of five people constitute the construction team supported by a number of casual labourers The former live in tents along roads they are working on while casual labourers go back to their homes after work This means that under any circumstances, there will be no need for workers' camps

- **maintenance activities**

Since most of these are but access roads with very low vehicular traffic, their routine maintenance will have negligible environmental impacts For instance, there will be no need for large borrow pits, there will be no dust or noise during maintenance Control of roadside vegetation will be by manual labour using slashers and hoes like anywhere else in Uganda

- **conservation areas**

All the access roads being opened up traverse areas close to protected areas They will, therefore, expose the forests, animals and the hitherto closed area to people of various categories and intentions The negative impacts of the road on these areas were not found significant after critical analysis For instance, there is already an existing road to MNFP in Hanga resettlement area while Sambiya River Lodge is located right inside the park

On the other hand, these roads once opened up will help UWA carry out and/or improve its monitoring activities in the buffer zones with ease unlike before

5 3 2 Indirect impacts

- **improvement of other roads**

Even though the district is contributing equipment, rehabilitation of bridges and opening up these access roads by the project would make the local administration authorities save money to improve other roads in the area Examples of such roads include Pakanyi-Kiryandongo road and Masindi-Kigumba road

- **improved accessibility**

Opening up these access roads would greatly improve access to hitherto remote and lesser developed parts of Masindi District More petty traders will join in the race to provide required services such sale of basic household items, and smallholder farmers will have access to markets It is expected that more "dukas" and stalls will develop along all access roads and centres by the youth especially Basic commodities such as paraffin, washing soap and salt will be readily available in nearby places unlike before Petty trade and other related business would be more likely boom after harvest

- **impacts on tourism**

Most of the areas around MFNP and KWR, Bugungu Wildlife Reserve and Budongo Forest have got potential to attract tourists Tourist attraction sites include areas of outstanding natural beauty e g rift valley and ridges, animals and other valuable areas such as rock outcrops, characteristic landuse pattern and many others These roads will boost that potential and tourism related activities such as eating houses, handicraft shops and game trophies may be developed in response to the prevailing demand Some of the tourists who usually go deeper into MFNP could actually spend sometime in these areas

- **impacts on agriculture**

Although agricultural land take by these roads is generally insignificant, it may affect specific farms involved and the community at large In some cases, these roads may create a barrier between different areas of a farm more especially, where new sections will dissect farms But this will not be a major problem because there is still plenty of land available in the project area and above all, the few people affected showed no remorse

The problems caused by severance may, however, be so insignificant too when compared to the benefits that will accrue to the roads improvement Actually, some farmers along Kimina -Alimugonza access road were convincing the construction team to divert the road course so that it would pass closer to their homes irrespective of whatever would be lost in the process In another case, a farmer whose medium-sized and already flowering maize garden was crossed by the road thus destroying some plants expressed his happiness to the EIA study team about the act Asked about whether he would like to be compensated, He said he had already received a lifetime compensation meaning the road

- **impacts on fuelwood use**

Woodfuel is the main source of energy in Uganda and more especially in rural areas For example, consumption of fuelwood is estimated at an average of 0 9 - 1 0 dry tonnes per year per capita Fuelwood consumption is therefore likely to increase if the project area is opened up The main reason being that new trading centres are likely to develop along these roads which may attract people from within and outside the project area Since hydro-electric power from Jinja stops in Masindi town (and is not reliable), those centres will use woodfuel

The end result will be that the now well vegetated areas along the proposed access roads will be targeted for charcoal production The potential impact is considered to be moderate but of long-term significance

- **economic benefits**

The project area is potentially a high agricultural productive part of the district which will benefit from the opened up access roads Maize and other agricultural products could easily be brought to Kampala and Jinja while manufactured goods from those towns will be easily delivered to the area Transport costs will reduce because of improved road surface and less time taken on the road

6 0 MITIGATION MEASURES

6 1 Introduction

The mitigation measures given below address negative impacts generated mainly by the resettlement activities Those associated with the roads programme are so insignificant to warrant any serious mitigation plan Maximum care taken during the "access road opening process" such that unnecessary felling of so many trees, crossing farmers' gardens and contaminating watercourses are avoided should be just enough

Where possible, for each mitigation measure suggested, indication has also been made in regard to responsibility, timing and funding arrangements In all cases, the technical, institutional and financial responsibilities proposed should not be taken as final or binding but indicative For example, if for some reasons a suggested arrangement is not workable new and practical ones should be hammered out by whoever would be in charge at that time rather than trying to insist

6 2 Mitigating Actions

- as a matter of urgency and necessity, some relief food should be provided to the settlers who have already moved in order to encourage them to stay and work in their gardens for longer hours In the short term, none of the interested parties may extend help in so far as this issue is concerned EPED should, therefore, take care of this as soon as possible because it has got a lot of influence on its general performance This should be for about 3 - 4 months which should be enough until individual households start harvesting from their new gardens

- train local communities, especially for less skilled jobs in order to reduce dependence on land for survival, which in turn will limit land fragmentation and degradation This should be a continuous process beginning immediately after all the settler families have shifted to their new places and before the "dependence syndrome catches up with them, especially males" Responsible institutions in this issue include UWA, development assistance organisations such as DED and respective district authorities The EPED Project should, however, initiate and coordinate the process because it is already on the ground When it winds up, the district and UWA plus other willing organisations should continue

- when planning for new social and physical infrastructure, budget adequately for voluntary immigrants as well as host communities to forestall potential competition over these resources This should entirely be EPED's responsibility in collaboration with local communities although the district should also be involved For example, decision on sites of health units, schools, boreholes and any other structure should be universally acceptable to both hosts and settlers

- in order to stem the development of the "dependence syndrome", long-term

development activities should be part and parcel of the project eg promote investment in local resources such as fish ponds, animal raising and small-scale (non agricultural) enterprises development With EPED in the lead, the district and other organisations involved in rural poverty eradication programmes should set up an integrated working arrangement to achieve better results Institutions which offer affordable rural credit schemes such as the European Development Fund, Ministry of Planning and Economic Development should be contacted for support This is a timeless activity

- there is urgent need to promote sustainable agriculture through soil and water conservation, increase agricultural productivity, reduce pre and post harvest crop losses among others This will be achieved through provision of improved seeds and farm implements at affordable prices, better food storage and marketing facilities and availing extension services on a continuous basis Once this is done, a steady increase in household incomes will likely be experienced

- strengthen existing institutions or help develop new ones to undertake long-term development and district planning that addresses changes, is capable of handling an increased number of social and environmental problems, and accommodating a much more diversified population With technical guidance from EPED, the district should immediately arrange to recruit an Environment Officer and provide his/her office with all the necessary logistical support In coordination with the district economist, population officer and the whole district establishment, the environment office will be very instrumental in promoting sustainable development in Masindi

- plan adequate health, drinking water and sanitary facilities to deal with the unexpected rise in the incidence of diseases, pests and vermin problems So far, dysentery and eye infections have become rife in the resettlement area The Project should entirely responsible for this because it requires immediate response and may have adverse impacts on the whole resettlement programme If the current project timing is not favourable, an extension should be considered because by all means this programme must be successful so that it sets a good precedent for the future

- provide the necessary social, psychological and counselling services to old and new residents to enable them cope with socio-economic changes, particularly for vulnerable groups and the aged The Department of Social Welfare in the district together with the Project Community Development Worker should take care of this aspect Change of attitudes is not a simple matter and, therefore, some time may be required before realising any positive results

- a tree planting programme for provision of fuelwood and poles should be undertaken, together with other activities at each family plot of land This can be achieved through extending support to CBOs involved in tree planting programmes The Forest Department appears to be more pre-occupied with controlling forest products extraction in and around Budongo Forest The support should be provided by the Project and should commence immediately before wood becomes scarce

- efforts should be made to resettle the families remaining in KWR This will also help re-unite members of the extended family system who were separated from each other by this project and reduce the temptation to sell or abandon the provided land Once again, this responsibility should be handled by the Project because it will fulfil one of its major goals, ie using the humane approach in removing encroachers from a protected area and helping the to live a relatively better life than before According to reliable sources in the district, some villages in the district area are willing to offer land to EPED so that more can be resettled (see 7 2 2) In the short term, this may not be possible because of financial and temporal constraints The Project should, therefore, enter a second phase in which more families should be removed from KWR Within the same phase, the Project would have time to consolidate achievements and monitor the progress of activities of the first phase

- to guard against immediate sale or fragmentation of land in the resettlement area, the District Land Board should withhold all title deeds of settlers until the programme activities end or after ten years, whichever is longer In case individual farmers want to use their titles as collateral for loans, the whole process should be done in conjunction with whoever will be in charge of the resettlement programme at the time, the District Land Board and the lending institution After loan recovery, all titles should be brought back to the land board if the ten years or the programme activities have not yet expired

7 0 ANALYSIS OF ALTERNATIVES

7 1 Introduction

The concept of alternatives is aimed at ensuring that the best among all possible options is selected Alternatives are usually compared in terms of potential environmental impacts, suitability under local conditions and institutional training and monitoring requirements The alternative of not carrying out the proposed project activities in the project area is discussed in order to demonstrate environmental conditions without the project

7 2 Alternatives

7 2 1 "Do nothing" Scenario

The "do nothing" scenario is assessed in the context of the major project activities resettlement, roads construction, health and water development, and supporting sustainable agriculture

The project is trying to introduce a humane factor in removing encroachers from a protected area by resettling them elsewhere and not just throwing them out If it succeeds, it will have set a good precedent for dealing with encroachments in other protected areas in Uganda All the other associated activities such as roads construction are auxiliary Without these activities, there will continue to be the risk of throwing people out of the reserve forcefully and/or further encroachment in the reserve Neither of the actions is desirable and that is why the project has to continue and if possible, be extended to concretise what it has so far achieved and what it needs to compare

The rate of biological diversity loss in the encroached areas of KWR would have continued unabated if the project had not been implemented This is true in spite of the fact not all encroachers in the wildlife reserve were all resettled

7 2 2 Resettlement villages

The Project did not have any other alternative piece of land available to resettle the people from KWR other than the present one After a long search and in collaboration with LCs, the district authorities identified the 1000 ha which was free and virgin but bordering MFNP This is all the Project had asked for under the pilot phase It is possible more would have been made available if required, for example, the Mutunda area has offered about 26 sq km and other villages have requested the Project "for consideration" In all cases, land for resettlement is always predetermined and financial constraints not withstanding, the Project had no option but to plan for resettlement villages in their present locations

It should be noted that even if this specific land was not given to the Project, it would have been claimed by the rich, leaving no chance of access to the smallholder encroachers The latter would have lost to the rich because of the conducive investment climate prevailing in

the district or nearby areas such as the proposed Nakasongola Industrial Estate

Or once evicted and these lands being near and unclaimed, the former encroachers would have settled in them hapharzardly The Project can therefore be viewed as having facilitated the inevitable but in a more planned and sustainable manner

7 2 3 Shifting of settlers

Families have to move or shift from the reserve at particular times of the year and not any time for fear of causing food shortages in the short term They are encouraged to move during the harvest time so that they can get food supply from their old gardens in the reserve This has not worked well though because the pace of shifting has slowed down It cannot be done in any other way unless the Project provides short term food relief

7 2 4 Roads construction programme

Opening up of access roads and replacement of culverts across water courses could not have been done at a better time In some parts of the resettlement area, accessibility by vehicle was impossible and, therefore, construction of resettlement centres and boreholes in those areas had to be suspended And without those structures in place, very few people were willing to shift and it had to be done the way it was That is, commence the programme and have the EIA done at the same time

8 0 MONITORING ACTIVITIES

8 1 Introduction

As implementation of the project proceeds, a monitoring process will need to be introduced to check progress and resulting effects on the environment Much of this work during the initial stages can form part of the routine inspections of contractors' work The process should also include regular views of the impacts that cannot be adequately assessed now, or which arise unexpectedly together with undertaking appropriate new actions to mitigate any negative effects

8 2 Environmental Monitoring Plan

At present, there is no organisation in Uganda with the physical, human and financial resources to cover all the environmental issues that need to be addressed under various projects In theory, NEMA has the remit to carry out most, if not all, of the types of environmental monitoring activities needed, but since it has very limited funds and cannot deploy its staff outside Kampala, it does not have the ability to do so Similarly, although DEOs are technically responsible for environmental management at the local level, they have no adequate funding for assuming this role Masindi District does not even have a DEO or other associated structures as of now Since this situation is not likely to change for some time, these organisation are not likely to offer additional services to the EPED In addition, the absence to date of any environmental quality standards means there are no specific requirements to enforce

The district itself must, therefore, take the initiative in undertaking the necessary management and monitoring measures, although close links should be maintained with other relevant agencies To achieve the environmental monitoring and management objectives, a two-stage programme is proposed

8 2 1 Short-term programme

Monitoring the environmental impacts of early stages of the project implementation, with particular emphasis on resettlement and maintenance of social and physical infrastructure This will also include implementation of the recommended mitigation measures

The short term monitoring programme should be carried out by a team of three to four experts from the district, NEMA and some other independent person(s) selected by the project itself The initial visit should be after all the people have settled in their plots of land and the roads programme is complete Thereafter, a programme of future visits should be drawn up accordingly All the costs involved in the short term monitoring activities would be born the project

8 2 2 Long-term programme

Monitoring the long term impacts of the project activities, other related developmental activities in the district should be the responsibility of the district itself, and UWA where possible The monitoring team put together by the district should include the DEO, some NGOs and international organisations, the institution that will have taken over the project and any other interested parties deemed appropriate Once in place, the team should develop a long-term strategy and action programme to include other district activities and the wider implications of future resettlement programmes This should proceed jointly with initiatives by the district to assist in building capacity for environmental management at the local level, which is currently being advocated by NEMA

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PHOTOGRAPHIC RECORD

Typical land use and housing types found in the project area Over time both are expected to improve as a result of the on-going EPED Project

A freshly opened up garden in the study area A lot of trees are usually cleared or burnt down before planting crops as seen above

One of the Resettlement Centres under construction in Kirulı/Kımına

There is inadequate safe water supply in the study area and its provision is given priority by the Project

A bulldozer hired by the Project widening one of the roads No compensation will be involved because a few crops and no houses will be destroyed

Another road being opened up No significant amount of spoil material will be created and there will be no need for use of gravel

Some of the settlers receiving treatment at Hanga Health Centre There is need to provide this service to many other areas in the resettlement area

Each resettlement village is provided with a Centre for variuos uses Settlers registerirng at one of the them