



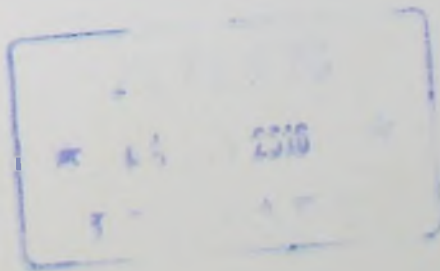
**THE EFFECTS OF THE WETLAND POLICY ON WETLAND CONSERVATION AND
PEOPLES' HOUSEHOLD INCOMES IN KABALE DISTRICT**

BY

MASANYU JULIUS
B.Sc. Forestry (Hons) Mak.

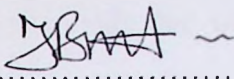
**A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND
GRADUATE TRAINING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN ENVIRONMENT AND
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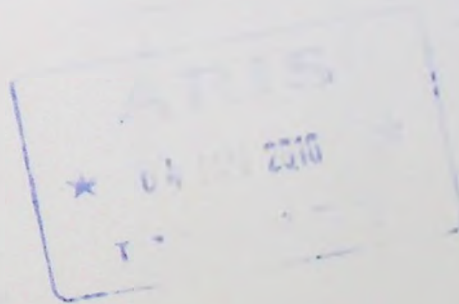
Declaration

I, Masanyu Julius solemnly declare that this dissertation is my original work and has never been submitted in any school, university, college or institute.

Signed  09/12/2014
Masanyu Julius Date

This dissertation has been compiled under my guidance and supervision as the University Lecturer.

Signed  09/12/2014
Dr. Nonyu Joseph (PhD) Date



Dedication

This work is dedicated to all the communities living near the wetlands, and all persons or groups working for wetland conservation whose contributions to wetland conservation are very immense and highly needed.

This work is also dedicated to my Dear Children - Savious, Joshua and Blessed as a means of enlisting their support for wetland conservation into the next generation.

Acknowledgements

I would like to acknowledge the contributions of the following individuals, groups and organizations whose efforts have enabled the successful completion of this work.

My heart goes first and foremost to my supervisor Dr. Joseph Oonyu for his guidance, patience and comments without which this work would not have been successful.

My Lecturers in the former Makerere University Institute of Environment and Natural Resources (MUIENR) for all the knowledge, skills and attitudes for the whole period of my course works and dissertation compilation did very commendable job. My wonderful sponsors Belgium Technical Cooperation (BTC-CBT) whose financial contribution was very instrumental for the whole Masters support especially the timely release of funds.

I cannot forget the physical as well as emotional support of my family who missed me during the time of data collection. I especially acknowledge the zeal of my wife who joined me for one week in the rough terrain of Kaara Parish in Muko subcounty. I also wish to whole heartedly thank my Research Assistants Mr. Mukama Evaristo and Mr Byaruhanga Emmanuel for the time and effort they accorded to this research work.

In a special way, I wish to acknowledge the support provided to me by the Director of Research and staff of NARO Bulindi ZARDI without which this work would not have seen the light of day.

Lastly but not the least I thank the respondents and groups of farmers as well as the Bee keepers for all their sincere suggestions and inputs that have made this work what it is today. To all the above I would like to say thank you and may the Almighty God richly reward you.

List of abbreviations and acronyms

AFRENA	Agroforestry research Network for Africa
CBO	Community Based Organisation
CID	Criminal Investigations Department
DPP	Director of Public Prosecutions
DWD	Directorate of water development
EIA	Environmental Impact Assessment
GDP	Gross Domestic Product
ICRAF	International Centre for Research in Agroforestry
IBA	Important Bird Area
IRRI	International Rice Research Institute
IUCN	International union for the conservation of Nature
KWFMA	Kitanga wetlands and fish pond management association
MISR	Makerere Institute for Social Research
MoNR	Ministry of Natural Resources
MoWLE	Ministry of Water, Lands and Environment
NARO	National Agricultural Research Organisation
NEMA	National Environment management authority
NWSC	National water and sewerage corporation
NGO	Non Governmental Organisation
NWP	National Wetlands programme
RC	Resistance Council
RCB	Ramsar Convention Bureau
WID	Wetlands inspection Division
ZARDI	Zonal Agricultural Research and Development Institute

Abstract

This study aimed at establishing why wetland degradation persists and recommends various strategies in wetland policy implementation and for conservation. The specific objectives were to assess local peoples' attitudes and perceptions of wetlands and wetland conservation, assess the level of illegal activities that are still being carried out in wetlands and lastly to identify and assess the contribution of wetland management programs in improving people's household incomes.

The methodology adopted a cross-sectional research design with qualitative and quantitative approaches. The cross-sectional design targeted 120 respondents distributed as 100 residents and 20 opinion leaders (Wetlands Inspection Division-WID, National Environment Management Authority- NEMA and Local Environment Committee Officials) in Kabale District. Primary quantitative data was collected using a questionnaire survey while qualitative data was obtained through interviewing key informants, observation, and photography. Data analysis was done using Statistical Package for Social Scientists (SPSS) and Microsoft Excel and presented using frequency tables, percentages and tabulations. From here descriptive statistics were obtained to make inference about the data.

The results from the study indicated out of the 20 sub counties of Kabale district, only 7 sub counties had wetlands left. Fifty three percent (53%) of the respondents had attitudes and perceptions favourable to wetlands and wetland conservation while 41% of the respondents' attitudes were still unfavourable to wetland conservation. Burning was the most notorious illegal activity facing most wetlands as suggested by 57 % of the respondents. This is closely followed by the hunting at 20 % since wetlands are the only source of free meat according to the respondents. For household incomes from wetlands, 22% of the respondents don't get any money at all from wetland while 43% get between 10,000-100,000 Ug shs per year. However 20% get between 100,001-200,000 Ug Shs while 12% of the respondents get between 200,001 up to above 1m Ushs.

The biggest reason for the persistence of the above illegal activities was found to be shortage of land (29% of the respondents). Being desperate or stubborn took the 2nd position (17%). The stubbornness is mainly due to over dependence on wetlands and lack of any other alternatives.

Nyamuriro wetland project was the only wetland programme targeting wetland adjacent communities in the 2 subcounties of Ikumba and Muko. Wetland restoration had been successful carried out by this programme with a realisation of papyrus head loads for firewood where couch grass rhizomes had been used before as firewood. The former hostile and unfavourable communities to wetlands were the same communities who did wetland restoration.

It was concluded that there was little effect of the wetland policy on wetlands and wetland conservation as well as peoples' household incomes seen from the continued illegal activities. It was recommended that continuous sensitisation be carried out as well as availing local communities with different alternatives as was the case with the Nyamuriro wetland project. A more detailed study to identify which wetlands to restore and when is also highly recommended especially in the sub counties without any wetlands at all.

Table of contents

Declaration	i
Dedication	ii
Acknowledgements	iii
List of abbreviations and acronyms	iv
Abstract	v
Table of contents	vii
List of Tables	x
List of Figures	xi
List of Appendices	xii
 CHAPTER ONE	 1
1.0 Introduction	1
1.1 Background to the study	1
1.3 Other policies related to the wetland policy	3
1.3.1 The National Environment Statute 1995	3
1.3.2 The Water statute 1995	3
1.3.3 The Forest Policy 2001	4
1.3.4 The National Water and Sewerage Corporation Statute 1995	4
1.3.5 The Waste Water Discharge Act 1996	4
1.4 Related Bodies Charged With Utilization Of The Policy	5
1.4.1 The Directorate of Water Development (DWD)	5
1.4.2. Wetlands Inspection Division (WID)	5
1.4.3 The National Water and Sewerage Corporation (NWSC)	5
1.4.4 The Ministry of Water, Lands and Environment (MoWLE)	6
1.5 Kabale wetlands	6
1.5.1 Wetland distribution in Kabale District	7
1.5.2 Economic values of wetlands	8
1.6 Problem Statement	9
1.7 General objective	9
1.8 Significance of the study	10
1.9 Research questions	10
1.10 Limitations of the study	10

CHAPTER TWO	12
2.0 Literature Review.....	12
2.1 Wetland usage.....	12
2.2 Degradation and loss of wetlands	13
2.3 Wetlands management in Uganda	14
2.3.2 Policy and Challenges of managing Wetland Ecosystems in Uganda.....	16
2.3.3 Management and Policy Challenges in Uganda	16
2.3.5 Wetland policy threats	19
2.3.6 Utilization of the wetland policy.....	20
2.3.8 Awareness of communities about wetland policies.....	22
2.4. Enforcement of environmental concerns and/or crimes in Uganda.....	23
2.4.1 Roles and responsibilities of the police in environment management.....	24
2.5 Other Wetland conservation policies across the world.....	24
2.5.1 The California wetland policy	24
2.6 Local community attitudes and perceptions towards wetland conservation.....	26
2.7 Wetland programs assisting in wetland conservation.....	30
2.7.1 The Wetland School Festival	30
2.8 Wetlands as sources of income for adjacent communities	32
 CHAPTER THREE	 34
3.0 Methodology and the study area.....	34
3.1 Research design	34
3.1.1 Study Population and Sampling.....	34
3.1.2 Data Collection	34
3.1.3 The Questionnaire survey	35
3.1.4 Direct Observations.....	35
3.1.5 Data Analysis and Presentation	35
3.2. The Study area	36
3.2.1. Location	36
3.2.2 Relief and soils.....	36
3.2.3 Vegetation and agriculture.....	37
3.2.4 Rainfall.....	37
3.2.5 Temperature	37
3.2.6.Socioeconomic background	38
3.2.7 Land use activities.....	38

CHAPTER FOUR.....	39
4.0 Results and discussion	39
4.1 Background to the Respondents.....	39
4.1.1 Gender distributions of the respondents	39
4.1.2 Education levels of respondents.....	39
4.1.3 Sources of income and income levels of the respondents.....	40
4.1.5 Age class of the respondents.....	41
4.1.6 Number of persons per household	42
4.1.7 Status of Land holding of the Respondents	43
4.2 Wetland usage.....	44
4.2.2 Current use of wetlands compared to 30 years ago	46
4.3 Attitudes and perceptions towards wetlands and wetland conservation.....	47
4.3.2 Local peoples' attendance of the wetland policy sensitisation meetings.....	51
4.3.5 Local peoples' awareness of the 1995 wetland policy.....	54
4.3.7 Ownership of wetlands	57
4.4 Illegal activities taking place in wetlands	58
4.4.1 Persistence of illegal activities despite the wetland policy	60
4.5 Household Incomes from wetlands in monetary terms.....	62
4.6 Communities' roles and responsibilities towards wetlands' conservation	63
4.7 Government's roles and responsibilities towards wetlands conservation.....	64
4.8 Wetland management programmes in Kabale district	65
4.8.1 Nyamuriro wetland conservation Project.....	65
4.9 The effects of wetland policy implementation in Kabale district	68
CHAPTER FIVE	71
6.0 Conclusions and Recommendations	71
6.1 Conclusions.....	71
6.2 Recommendations.....	73
REFERENCES	75
Appendices.....	80

List of Tables

TABLE 1. THE SUB COUNTIES OF KABALE DISTRICT WITH & WITHOUT WETLANDS.....	8
TABLE 2: FREQUENCY OF ATTENDANCE OF WETLAND SENSITISATION MEETINGS.	52

List of Figures

FIGURE 1: MAP OF KABALE DISTRICT WITH ITS BORDERING DISTRICTS	36
FIGURE 4. 1 : GENDER DISTRIBUTION OF THE RESPONDENTS.....	39
FIGURE 4. 2 LEVELS OF EDUCATION OF THE RESPONDENTS	40
FIGURE 4. 3: INCOME LEVELS OF THE RESPONDENTS	41
FIGURE 4. 4: THE POPULATION STRUCTURE OF THE RESPONDENTS.....	42
FIGURE 4. 5:THE NUMBER OF PERSONS PER HOUSEHOLD.....	43
FIGURE 4. 6: LAND HOLDING OF THE RESPONDENTS	44
FIGURE 4. 7: SHOWING PRESENT USE OF THE WETLANDS	45
FIGURE 4. 8: A COMPARISON OF WETLAND USAGE BEFORE (B) AND AFTER THE POLICY (P)	46
FIGURE 4. 9: RESPONDENTS ATTITUDES AND PERCEPTIONS TO WETLANDS AND WETLAND CONSERVATION.....	49
FIGURE 4. 10 RESPONDENTS MONETARY CONTRIBUTIONS TO WETLAND CONSERVATION.....	50
FIGURE 4. 11: RESPONDENTS' ATTENDANCE OF THE WETLAND POLICY SENSITISATION MEETINGS	51
FIGURE 4. 12: PEOPLE/ENTITIES/ GROUPS WHO ARE INVOLVED IN THE SENSITISATION MEETINGS	53
FIGURE 4. 13:RESPONDENTS AWARENESS OR LACK OF AWARENESS OF THE POLICY.....	55
FIGURE 4. 14:RESPONDENTS AWARENESS OF THE GUIDELINES TO WETLAND USE.....	56
FIGURE 4. 15: PRESENCE OR ABSENCE OF GROUPS IN WETLAND COMMUNITIES	57
FIGURE 4. 16: RESPONDENTS VIEWS ON THE NATURE OF WETLAND OWNERSHIP	58
FIGURE 4. 17: RESPONDENTS VIEWS ON THE CONDITION OF ILLEGAL ACTIVITIES.....	59
FIGURE 4. 18: MAJOR ILLEGAL ACTIVITIES STILL TAKING PLACE IN WETLANDS.....	60
FIGURE 4. 19: WHY ILLEGAL ACTIVITIES HAVE PERSISTED IN WETLANDS	61
FIGURE 4. 20: HOUSEHOLD INCOMES FROM WETLANDS EXPRESSED IN MONETARY TERMS	62
FIGURE 4. 21: COMMUNITIES' ROLES AND RESPONSIBILITIES TOWARDS WETLANDS AND WETLANDS CONSERVATION	64
FIGURE 4. 22: ROLES AND RESPONSIBILITIES OF THE GOVERNMENT TOWARDS WETLANDS	65

List of Appendices

APPENDIX 1: QUESTIONNAIRE:..... 80

APPENDIX 2. MEDICINAL USES OF WETLAND PLANTS IN UGANDA. 87

APPENDIX 3: THE NATIONAL POLICY FOR THE CONSERVATION AND MANAGEMENT OF WETLAND RESOURCES (1995) 90

CHAPTER ONE

1.0 Introduction

1.1 Background to the study

Wetlands all over the world have been lost or threatened in spite of various international agreements and national policies. This is caused by the public nature of many wetland products and services, user externalities imposed on other stakeholders and policy intervention failures that are due to lack of consistency among government policies in different areas (economies, environment, nature protection, physical planning etc. (Turner *et al.*, 2000).

Uganda ratified the Ramsar Convention on Wetlands of international importance especially as habitat to the waterfowl. Uganda has gazetted more wetlands of international importance designated under the Ramsar Convention, bringing the national total to 11 sites covering a total of 354,803 ha. The convention on wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty, which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

On the National scene, Uganda's wetlands are managed under the National wetlands policy for the conservation and management of wetland resources of 1995. This policy was prepared by the Ministry of Natural resources in consultation with all stakeholders. It calls for; No drainage of wetlands unless more important environmental management supersedes, Sustainable use to ensure that benefits of wetlands are maintained for the foreseeable future, Environmentally sound management of wetlands to ensure that other aspects of the environment are not adversely affected, Equitable distribution of wetland benefits and Application of environmental impact assessment procedures on all activities to be carried out in a wetland to ensure that wetland development is well planned and managed. The policy also aims at; Ensuring that no drainage occurs unless more important environmental management requirements supersede, Ensuring that only non-

destructive uses are carried out in and around wetlands, Ensuring that wetland developments are subject to environmental impact assessment and audit, and Maintaining an optimum diversity of uses and users and consideration for other stakeholder when using a wetland.

1.2 Background to Environmental Policy

According to Sheldon Kamieniecki *et al.*, (1986) Environmental policy is not an artifact of administration, grandly enunciated by presidents duly enacted by responsive legislature and efficiently administered by the executive establishment. It is rather a jelly built structure in which innumerable individuals, private groups, bureaucrats, politicians, agencies, courts, political parties and circumstances have laid down the plunks, hammered the nails plastered over the cracks, made sometimes unsightly additions and deletions and generally defined holistic or ecological principles of policy design. It is obvious that environmentally protective policies were adopted and implemented with modest effectiveness. But equally obvious is the failure of public policy to achieve a consistent and coherent environmental orientation that would withstand the intrusion of well meaning and not-so-well-meaning interests which have not caught up the vision of a terrestrial ecological paradise.

Environmental policies reflect the dominant structure and values of a political system. Lowi (1962) cited in Sheldon Kamieniecki *et al.*, (1986) urged that policies determine politics rather than the other way round. has considerable appeal, it is at least arguable that the character and vitality of public policy in all sectors of the economy including environmental policy are the product of overall institutional structure that is, the manner in which private interests relate to government, the channels of communication, the resources they bring to bear, the access to leadership positions of various groups within society, the internal relations of groups having power within the government, the capacity to generate information and the strategic opportunities either to advance initiatives or to veto the initiatives of others

1.3 Other policies related to the wetland policy

1.3.1 The National Environment Statute 1995

The national environment statute of 1995 is among the many statutes relating to the wetland policy as it calls for the sustainable management of wetlands. The national environment management authority (NEMA) acts as the coordinating and supervisory body (Statute supplement, 1995) and crucial sections of this statute are 35, 36, 37 and 38 of which section 35 comments on the management of rivers, lakes and structures that may block any river from flowing without any disruption. Section 36 concentrates on the management of river banks and lakeshores which include wetlands.

The statute in a simplified manner aims at not reclaiming any wetland (IUCN, 1995) and not disturbing or introducing alien species. Other laws relevant to wetland conservation include the management of wetland resources (2000), sections 37, 38, and 108 of the national environment statute that facilitate sustainable exploitation of wetland resources. They also provide strong provisions relating to EIA, audit and monitoring, pollution and deposition of adverse effects on wetlands. It is assumed that putting into practice the environment statute helps to maintain wetlands in their natural state. Offenses under the statute penalize anybody from affecting the work of environmental inspectors, environmental impact assessors and the ones who cause pollution. Ntambirweki, (1998) cited its importance in safeguarding ecosystems.

1.3.2 The Water statute 1995

This statute provides for use, protection and management of water resources with 2 main objectives; that of promoting national management and use of waters by the progressive introduction of appropriate standards and techniques for the protection and management of water. Under this statute lies the responsibility for metering water especially for construction to avoid wastages. Where one needs to have a meter permit the statute does influence this. However the offences under this statute are allowing water to be wasted without reasonable cause and taking impure water other than that provided by the water permit.

1.3.3 The Forest Policy 2001

This ensures the sustainable supply of forest products and services and environmental conservation of all types of forest reserves being managed for production. It is therefore important to safeguard the forests as they are instrumental in maintaining the water cycle. The advantages of the forest policy are that it has new approaches and production directions for the sustainable development of the sector much as it is sensitive to peoples' livelihoods and their participation contrary to the previous ones that emphasize resource conservation. Forests just like wetlands maintain water in an ecosystem for a longer time to influence the water table and water availability to the nearby communities. Therefore the implementation of the forest policy especially in watershed management aids a nearby wetland to provide wetland services to the people.

1.3.4 The National Water and Sewerage Corporation Statute 1995

This law creates a corporation charged with supplying water and disposal of sewage in urban centers. This law is complementary to the wetland policy because the two relate to the provision of safe drinking water and waste water respectively. The piped water for Masaka town for instance, comes from Kyojja wetland without which water provision- an essential need to an urban center would have been difficult and costly. Most sewerage (treated and sometimes untreated) ends up in wetlands. This statute henceforth has a greater bearing on the wetland characteristics and ability to provide wetland products and services to the communities.

1.3.5 The Waste Water Discharge Act 1996

This act establishes the criteria for waste discharge and control by the government. This therefore limits the discharge of waste water in naturally clean waters. This is in line with the stipulations resulting from the statute born as a result of the 1995 constitution. It has helped maintain clean waters and not affecting the organisms there. Urban waste water and household waste water, grey water and roof collected rain water are all potential sources of water which can be used in an effort to conserve limited water resources. Urban waste waters may contain a range of pathogenic microorganisms which are of concern to water reuse due to the potential for transmission from reuse applications

(Windward *et al*, 2009). In particular regardless of the source, grey water is shown to consist bacteria of faecal origin. Most potentially harmful species occur at relatively low concentrations such that only those with low infection doses are likely to be of real concern. Examples of such species include *Campylobacter jejuni* shiga toxin producing *Escherichia coli* and *Shigella* spp.

1.4 Related Bodies Charged With Utilization Of The Policy

1.4.1 The Directorate of Water Development (DWD)

Water resource management including support of wetlands dealing with waste treatment is one of the functions of this organization. It is also charged with the responsibility of dealing with waste discharge permits. These duties are all specified under sections 28 and 29 of the water statute of 1995. It also assists in declaring waste and sewage areas as stipulated under section 47 of the 1995 statute.

1.4.2. Wetlands Inspection Division (WID)

The maintenance of the biophysical social economic value of the wetland for the present and future generations is one of the responsibilities of this division. The national wetlands programme is also charged with the responsibility of making an inventory of all wetlands and creating awareness in relation to wetland management issues. The wetlands inspection division has also enabled decentralized management to take place involving the local populace.

1.4.3 The National Water and Sewerage Corporation (NWSC)

The NWSC appreciates the importance of wetlands like Nakivubo which has a potential impact on the purity of water in the inner Murchison bay. The treatment capacity of the wetland is monitored hand in hand with KCCA or wetlands inspection division.

1.4.4 The Ministry of Water, Lands and Environment (MoWLE)

This is charged with the responsibility of putting given land uses into use, dealing with land titles and mitigating certain environmental impacts as provided for in the constitution (Kansiime, 2000).

1.5 Kabale wetlands

According to the wetland status report for Kabale District (1996), Kabale district covers about 1,730km² of which 111km² or 6% is wetland area. 51km² or 46% of the wetland is permanent wetland, while 60km² or 54% is seasonal. The district has got a hilly terrain with distinct valleys separating the hills, which are volcanic in origin. The wetlands occupy these valleys. These wetlands lie at altitudes varying between 1,525-2,135m (5000-7000ft) above sea level.

Kabale district wetlands drain to the Lakes Bunyonyi, Edward and Victoria drainage systems. The wetlands that drain into Lake Bunyonyi include Gweru bay, Kagoma and Kigeyo-Ruhuhuma. Those that drain into Lake Edward include Kaniabaha, Kiruruma north, Muchoya, Nyakasa and Rushoma. Kiruruma south, Nyakizumbe, Sanja, Rwabarera, Lusuma, Kabizi and Ikona all drain to Lake Victoria through the Kagera River.

The plant community in the wetlands used to be dominated by *Cyperus papyrus* and *Typha* spp (Kabale District wetland status report, 1996). However, with the drainage of wetlands that started in the mid 1940's, the original vegetation remains in very few wetlands such as Ruhuhuma, Ikona and Kagoma. *Cyperus* spp now dominates most of the wetlands, which are seasonal and converted for cultivation. It was the government policy then that led to the drainage of wetlands because they (wetlands) were regarded as wastelands and therefore better off when converted to other uses.

Evidence of wildlife is only in few remaining wetlands of Kagoma, Kaniabaha and Ruhuhuma. The animals there include sitatunga, and a few others. These few also have catfish, which is usually small in size. Crested cranes are common in both intact and

modified wetlands. Ducks occur in the remaining wetlands too (Kabale District wetland status report, 1996)

Drainage is by far the greatest threat to wetlands in Kabale. Many have been completely drained and converted to dairy farms such as Kiruruma, north and south. 58% of the total wetlands have been converted. The seasonal wetlands are most affected in that 83% have been converted as compared to 27% of permanent wetland (Kabale District wetland status report, 1996). Crops grown in converted wetlands include Irish potatoes, sweet potatoes beans and sorghum. Pastures are also planted on drained wetlands. Silting is another threat which is caused by massive erosion in the higher lands.

Massive conversion of the wetland ecosystem has caused loss of wildlife habitat. Papyrus commonly used for thatching houses and making mats is very scarce and this is a concern of the rural poor who cannot afford iron sheets and tiles. The benefits of the majority have been reduced with the individualization of wetlands, which has denied free access to the use of the resource. Most of the wetlands have been leased except for Kagoma, Kaniabaha and Ruhuhuma, which are deeply waterlogged.

1.5.1 Wetland distribution in Kabale District

This study covered all the 20 sub counties that make up Kabale district. However it was discovered that only 7 sub counties had wetlands worth being described as such. The rest i.e. 13 sub counties had only less than half an acre of active wetland left or sometimes completely nothing to be described as a wetland. This is attributed to the government policy of the 1940's when wetlands were seen as wastelands and were therefore more useful only if they were converted to other uses and mostly agricultural uses such as crop or farmlands. Table1 shows the sub counties making up Kabale District and whether they have wetlands or not.

Table 1. The sub counties of Kabale district with & without wetlands.

S/No	Sub counties with wetlands	S/No	Sub counties without any wetland
1	Kashambya	1	Kamwezi
2	Bukinda	2	Kamuganguzi
3	Rwamucucu	3	Ruhija
4	Rubaya	4	Bubare
5	Muko	5	Kaharo
6	Butanda	6	Maziba
7	Bufundi	7	Ikumba
		8	Buhara
		9	Kyanamira
		10	Kitumba
		11	Kabale Municipal (Southern division)
		12	Kabale Municipal (Northern division)
		13	Hamurwa

1.5.2 Economic values of wetlands

According to Emerton *et al.*, (1999) a small section of Nakivubo wetland i.e. 45% of the wetland used for crop farming alone would yield 200 million Ug Shs per year while the rest of the area left intact would generate 180 tones of papyrus per year worth 17.5million Ug Shs per year and 32 million shs per year from brick making while fish farming would bring in 6million shs per year if the users are organized. This considers only direct economic consideration going out to people immediately surrounding the wetland and leaves out wetland services that accrue to people who are located several kilometers away from the wetlands. Nakivubo wetland is only 5.29 km² and is therefore smaller compared

to all the wetlands in Kabale District. Appendix 2 gives a list wetland plants that are medicinal to different tribes in Uganda. In brief there is more value in a sustainably utilised wetland leave alone the whole host of products, services and functions therein.

1.6 Problem Statement

Wetland conservation and management is a shared responsibility for all Ugandans, but government has a leading role to play. Government has played its role in a number of international as well as national initiatives to bring about wetland conservation. Notable amongst these are the institutionalization of NEMA as the leading agency in environmental matters and the formation of the wetland inspection division (WID) as the lead agency for wetland conservation. Uganda ratified the Ramsar Convention on Wetlands of international importance especially as habitat to the waterfowl. Uganda has gazetted more wetlands of international importance designated under the Ramsar Convention, bringing the national total to 11 sites covering a total of 354,803 ha. In 1995 government of Uganda also put in place the national policy for the conservation and management of wetland resources.

However, despite the above government efforts, wetland degradation still persists in various forms. This study will among other things establish why wetlands degradation persists and recommend various strategies in wetland policy implementation and conservation.

1.7 General objective

The overall objective was to assess the effects of the implementation of the Wetland policy on wetland conservation and people's household incomes with a view to achieving sustainable and people-centered wetland conservation.

1.7.1 Specific objectives

In particular the specific objectives were to

- i) Assess peoples' attitudes and perceptions towards wetlands conservation.

- ii) Assess the level of illegal activities that are still being carried out in wetlands;
- iii) Assess the contribution of wetland management programs in improving people's household incomes.

1.8 Significance of the study

The study was carried out from Kabale district, southwestern Uganda where wetlands were drained for dairy and crop production due to the government policy of the 1940's that encouraged conversion of wetlands. This study is going to be conducted after more than ten years of implementing the 1995 Uganda wetlands policy. The results of this study will be helpful to policy and decision makers on how best the wetland policy can be more practical to achieve intended results on the ground. The study is also going to serve as one of the channels of informing the public of their role in implementing the wetland policy to achieve the conservation of wetlands.

1.9 Research questions

This study was guided by the following questions:

- i. What are the local peoples' present awareness levels of the wetland policy?
- ii. How has this awareness affected on peoples' attitudes and knowledge of wetlands and wetland conservation?
- iii. Which wetland illegal activities have stopped and which others have continued and why ?
- iv. What are the wetland management programmes are in place for the local communities?
- v. What are the contributions of the above wetland programmes to the local people's household incomes?

1.10 Limitations of the study

This study was limited by a number factors

- i. Difficult terrain
- ii. Bigger study area
- iii. Time

iv. Financial constraints

However the above problems were minimized to have as little effect to the study as possible. The difficulties with the terrain were minimized by selecting a research team comprised of young and strong men who were residents and are used to the terrain.

The time constraint together with a wider study area were managed by staying as a team and planning ahead of time coupled with working during weekends and late in the evenings. The use of the already existing local government structures at the sub counties saved us considerable time and a one month was enough for data collection in the whole district. The researcher also improvised with his own car and was his own driver to cut on the costs involved.

CHAPTER TWO

2.0 Literature Review

2.1 Wetland usage

For 6000 years river valleys and their associated flood plains have served as centers of human population, with many boasting sophisticated urban cultures. Their fertile soils brought in huge harvests upon which the peoples of the regions could depend. Today the wetlands which nurtured the great civilization of Mesopotamia and Egypt and of the Niger, Indus and Mekong valleys continue to be essential to the health, welfare and safety of millions of people who live by them (Williams, 1991)

All wetlands are made up of a mixture of soils, water, plants and animals. The biological interactions between these elements allow wetlands to perform certain functions and generate healthy wildlife, fisheries and forest resources. The combination of these functions and products together with the value placed upon biological diversity and the cultural values of certain wetlands makes those ecosystems invaluable to people all over the world (Mitsch and Gosselink, 1993)

Flood control, water purification and shoreline stabilization for example can all be maintained by wetland systems. If wetlands are converted or developed without first taking into consideration their full value, the negative consequences can be felt immediately by the local people. The economy of a region or nation may be affected adversely if the alterations are many or large (International Rice Research Institute, IRRI 1995).

When conversion is attempted, the ability of the natural wetland to sustain alternative development is lowered; moreover such conversions require more sophisticated management than is generally available to the average rural community. Despite the importance of a range of resources and services which wetlands provide, most countries have tended to take these for granted, as a low priority, but even as apathy and ignorance

continue to permit conversion of wetlands, people are becoming increasingly aware of the loss of the services that wetlands once provided free of charge (NEMA,1995).

2.2 Degradation and loss of wetlands

Activities resulting in degradation and loss of wetlands include: agriculture, commercial, residential and industrial development, resource extraction, waste and dredge disposal, silviculture as well as mosquito and/or vector control. The primary pollutants causing degradation are sediments and nutrients, pesticides, salinity, heavy metals, weeds, low dissolved oxygen, P^{H} and selenium

In Uganda's context, the Local Government Act includes legal and policy instruments for sustainable management of natural resources to reinforce legislation on environment, water, wildlife, forests and land. Legislation seeks to formalize peoples' and communities' participation allowing for devolution of resources management to local government and community levels. The basic features of these are that they create a formal legal basis for recognizing and upholding mutual rights and obligation between the government and the rights holders (Makerere Institute of Social Research (MISR) /Land tenure center, 1998).

While not conferring absolute ownership, they combine legally secured use rights with upholding of governments supervisory and protective role. The rights are with certain conditions tradable, bringing them in line with other efforts to replace command control with economic regulatory mechanisms. For example the Uganda Land Act of 1998 provides for the tenure, ownership and management of land in accordance with the constitution which states that; "all land in Uganda is vested in the citizens of Uganda and is held customarily, freehold or leasehold".

In Uganda, several peri-urban wetlands are facing degradation owing to the expansion of urban centres. For instance Nakivubo, Kansanga and Mityana wetlands are being degraded through pollution and vegetative clearance to cater for urban growth. Those such as the Nakawa, Kirombe and Luzira wetlands in Kampala are degraded for

industrial development much as they are instrumental in detoxifying wastes before they end up in Lake Victoria.

2.3 Wetlands management in Uganda

The management of wetlands has become so important because these ecosystems are still being drained or encroached on by agricultural enterprises and urban areas. The simple act of being able to identify the boundaries of wetlands is such an important skill requiring the services of surveyors and ecologists as well. The onset of prudent wetland management in Uganda can be traced to the March 1986 formation of the Ministry of Environment. This was after the issuing of a circular in September 1986 to all District Administrators banning further drainage of wetlands, pending a more elaborate policy which would be the basis of proper management of wetlands (The National Environment Regulations, 2000)

A crucial matter for the application of plausible management is ownership of the wetlands i.e. who should have the responsibility to see that the necessary protective measures demanded by the policy or legislation are put into effect. The ownership status of un-leased wetlands is that they belong to the Uganda Land Commission which holds it on behalf of the Ugandan government (Sunday, 1999)

Literature regarding policies in Uganda is traced way back between 1900 and 1902 when wetlands were considered as wastelands especially in Ankole and Toro (Ntambirweki, 1998). The 1995 Ugandan constitution gave very little regard to wetlands although it catered for the environment. Wetlands are part of the environment and their conservation and management is a shared responsibility for all Ugandans. Government too has a leading international obligation to conserve wetlands and sustainably use them as specified in the Ramsar convention on wetlands of international importance of 1971 especially as water fowl habitats of which Uganda is signatory and a contracting party (MoNR, 1996).

The 1995 Ugandan constitution has sections relating to the environment where laws are intended not only to preserve the environment but also manage it sustainably. The 1995 Ugandan constitution clearly stipulates that the state should promote sustainable

development of natural resources as embedded in articles 237 and 245 where wetlands are also included. The communities near wetlands are the stakeholders who can achieve wetland sustainable management by protecting the wetlands themselves. Wetlands, being fragile ecosystems, their future immensely depends on public participation (Mwesigwa, 2003). Hence there is a need to sensitise people about the advantage of wetland protection in abiding with the constitutional call. The 1995 constitution led to related statutes like the environmental statute, water statute, and wildlife statute of 1995 which all aim at safeguarding the environment. The wetland policy of 1995 is also a result of the 1995 constitution and has the following goals.

- i. Establishment of principles by which wetland resources can be optimally used and their productivity maintained
- ii. End of unsustainable practices in wetlands to stop decline in their productivity such as drainage
- iii. The need to maintain biological diversity in wetlands either in the natural community of plants and animals or multiplicity of agricultural activity
- iv. Maintenance of the functions and values derived from wetland resources
- v. Emphasis is put on recognition and interactions of wetland functions in resource management and economic development decisions with regard to sector policies and programs such as fisheries and sound environmental management.
- vi. Some of the guidelines to accompany the above goals embedded in the policy are traditional uses and access rights of the people living adjacent to wetlands which should not be affected and they should continue deriving benefits from wetlands
- vii. Wetland users ought to ensure that the overall water balance is maintained such that the surface is not dry at whatever cost ensuring that the water table does not fall below 0.5metres. This helps maintain the water in the wetlands.
- viii. The guidelines also explain the frequency of papyrus harvesting which should not be more than once in every 15 months and on no occasion should the papyrus be burnt (MoNR, 1995)
- ix. Finally as per the guidelines to the policy there is need to control activities in wetlands like brick making. Brick makers should form associations to be licensed in accordance with the national policy on wetlands. Basically this policy is in line with the national environment statute.

2.3.2 Policy and Challenges of managing Wetland Ecosystems in Uganda

Uganda has an area of about 241, 5 00km², of which, fresh water constitutes about 15% covered with open water bodies while 13% is covered by Wetlands. The country is in the Nile Basin catchments (State of the Environment Report, 2004/05).

The Government of Uganda has put in place systems and procedures for the sustainable management of wetland resources by establishing institutions backed by policies and laws. Despite these efforts, wetlands continue to come under pressure especially in the urban areas, where they are drained or filled to create room for establishing settlements or industries. Busulwa and Mafabi, (2003) noted that gaps and setbacks in the Ugandan wetland policy implementation exist as in any other environmental policy.

Rapid population growth, increased agricultural production, urbanization and industrialization are the leading causes to the depletion and degradation of the available water resources (Busulwa and Mafabi, 2003). With a GDP growth rate of about 6% and a population growth rate of 2.7%, natural resource exploitation will continue to form the basis for livelihoods of the majority in the foreseeable future.

2.3.3 Management and Policy Challenges in Uganda

Busulwa and Mafabi, (2003) noted that although progress is being made, environmental managers agree in many cases that successes are off-set by slow progress and, in some cases, failure to plan and control land use, natural resources conversion, waste disposal, and other forms of environmental management. However, the successes and failures need to be considered against the backdrop of high population growth (which triggers high speed habitat conversion), widespread rural poverty (which in itself is a major cause of natural resource abuse), lack of appreciation of the importance of Uganda's natural resource base for economic and social development, and limited understanding at all levels about the processes that undermine Uganda's natural resources base. According to Busulwa and Mafabi, (2003) the main challenges to the wetland policy include ownership, trans-boundary nature of the resources and political interference among others.

2.3.4 Major activities to address challenges and major gaps in the wetland policy

Uganda has made several advances as far as environmental management is concerned. Busulwa and Mafabi, (2003) identified two lines of actions being pursued. The first is an immediate campaign to increase knowledge, understanding and strengthen enforcement mechanisms to implement the existing laws and regulations.

In the medium and long-term, there is need to strengthen the process of environmental decision-making in Uganda. This involves strengthening the institutions and programmes that deal with environmental and natural resources management, notably at the lower government levels, streamlining policies, clarifying roles and responsibilities and increasing resource allocations. Such measures are imperative to sustain efforts of the proposed campaign, but will also help to generally strengthen the overall efforts to ensure sustainable natural resource use, which forms the basis for long-term and sustained economic prosperity in Uganda. According to Busulwa and Mafabi, (2002) the medium and long-term actions include deep institutionalization and making an efficient policy and legal framework.

In as far as institutionalization is concerned, Busulwa and Mafabi (2003) further noted that:-

- (i) Regulations have been formulated under the National Environment Statute, that prohibit riverbank cultivation, and generally that govern land-use and environmental management in Uganda.
- (ii) National wetlands programmes, working towards the sustainable use of Uganda's wetlands, many of which are river lines, through, among others, assisting district with the formulation of wetland action plans and wetland management plans. A ten-year wetland sector strategic plan is in place and being implemented;
- (iii) At the moment Uganda is developing a comprehensive land use policy.

However, the policy and legal framework presents a challenge in that many environmental institutions are young and some are still in their formative stages. These include: the constitution (1995), the National Environment Statute (1995) and its

regulations, the wildlife Statute (1996) the Local Government Act (1997), the Land Act (1998) and the Forest Act (2003) cater for most of the environmental concerns. Therefore, the environment and natural resource sector has to deal with a whole series of challenges, some of which apply to many other sectors as well, and some which are specific. A good example is found in laws that govern the water resources. These include the National Environment Statute (1995), Wildlife Statute 1996, the Fisheries Policy (2002) and the water Act 1995. Since a number of institutions have a stake in the management of water bodies depending on use, there is usually a conflict resulting from their mandates. A case in point is the Ministry of Water. This is the lead agency for water issues, but it is the responsibility of Ministry for Agriculture to provide water for production. The fisheries department is also responsible for managing the fish in Ugandan waters including the ones in the protected areas, which are managed by the Uganda Wildlife Authority located in another ministry. The wetlands inspection Division, which is the lead agency for wetland management in Uganda, uses a multi-sectoral approach because wetland management is cross cutting and many of them are not protected. It is therefore a challenge to coordinate all the key players involved in the management of wetlands.

However, the main issue of institutionalization is that there are no adequate mechanisms to coordinate participation by the different players who are often mandated to deal with water and fisheries issues. There also exist conflicting national and local policies, for instance, industrialization and rural transformation versus environmental protection and sound natural resource management. It may be interesting to note that among regionally shared resources like Lake Victoria the introduction the Nile perch and water hyacinth to date is still unclear, yet these have all caused imbalances on the ecosystem.

According to Busulwa and Mafabi, (2003) the major gaps in the wetland policy are lack of comprehensive land use policy, poor funding of environmental activities and inadequate law enforcement. Planning is often interfered with by the politics. With the increasing population, land is becoming scarce which implies that the pressure on the natural resources has increased. There are persistent practices that lead to land

degradation and these include; bush burning, poor water conservation methods leading to soil erosion, land tenure and unplanned developments.

2.3.5 Wetland policy threats

There is extreme pressure on the wetlands emanating from population pressure due to the high density of approximately 4,128 persons per km². Uncontrolled development of activities has immensely put pressure on wetlands hence greatly affecting the wetland ecosystems as they are greatly strained, the end result of this being degradation.

Dumping which is related to the above is also a threat to the wetlands in that they are filled during holidays and awkward hours yet those dumping have full knowledge that enforcement staff are off duty (Mugisha, 1993). It is an uphill task to prosecute these cases and the affected wetlands can not recover their original state even if the culprits are required to restore them.

Mugisha, (1993) observed that wetland ownership affects wetlands in Uganda greatly as the owners of land with wetlands tend to misuse them thus degrading them. This arises from the fact that they are considered a personal property where any activity can be carried out and the end result is severe environmental effects affecting everybody. In the effort to alleviate poverty, of late there is increased activity in the wetlands in the name of fighting poverty of which some of these activities are incompatible with wetland conservation and in so doing the entire wetland is degraded. For example brick making which done for economic gains but gives no regard to wetland conservation. It is probable that this attitude stems from the old perception of wetlands in their natural state being considered as wastelands.

Issuance of titles in wetland areas is yet another threat. Whereas it is a constitutional and legal requirement that areas such as wetlands are trusted for the common good, there are situations where the very institutions charged with this responsibility are the ones destroying them in the name of giving out titles. This gives impetus to people to go to

wetlands and build there as they carry out all sorts of activities which degrade the ecosystem severely and thus becoming a threat (Mugisha, 1993)

Transfer of management and enforcement responsibility right from the district to the community levels has also negatively affected the wetlands. The enforcement capacity at these levels does not match the widespread nature of the problems of wetland abuse. The incidences of local authority intervention, had it to be sufficient, then it would have stopped wetland degradation.

Relatedly, planning requirements would also cater for the urban flood prone areas where the urban poor have massively encroached into wetlands (Mugisha, 1993). Socio-economic factors such as poor farming practices lead to rapid conversion of wetlands in Uganda. Until now NEMA continues to receive development proposals on wetland areas concerning plots.

2.3.6 Utilization of the wetland policy

The Ugandan government has formulated a number of policies to regulate land use and impact on the environment and wetlands in particular. However the alarming rate at which natural resources are being depleted shows that these laws and policies are not enforced effectively (Rwakakamba, 2009). Worldwide, the policy has not been effective in countries like the United States of America where wetlands in 48 States have been lost since the 1700's. The net loss has been 40,000 hectares per year, but with the strengthening of the policies, 500 hectares are being recovered per year (Ramsar Convention Bureau - RCB, 1999)

In relation to the Ramsar Convention, Malaysia has set goals for a wetland policy which work under an umbrella to protect wetlands, and has proved to be effective. The case of Australia where there is both federal and provincial governments, one out of the eight states has adopted the policy and this was in South Wales. However each of the states has incorporated the wetland policy in its development goals with the assistance of the commonwealth provincial government and this is particularly true in the Northern

territory, South Australia, and Tasmania. Funding for effective implementation of the policy has been established by the national heritage trust (RCB, 1999). This has helped reduce wetland loss in the country.

According to Fianko *et al.*, (2009) a detailed study has been carried out on the Densu river and its tributaries to identify the chemical characteristics of the water, examine the hydrological connections among the land cover types and evaluate the relative contributions of anthropogenic activities to the river's pollution. The results indicated that sites closer to the most urbanized, industrialized and agricultural areas were severely impaired. The river water was found to vary considerably in terms of physical and chemical properties. The water was slightly alkaline, to fresh and of mixed Ca-NaHCO_3 and Ca-HCO_3 types. Pollution had reached such a proportion that it destroyed the aquatic ecosystem in most exposed sections of the river. Reasons for this were a failed wetland policy in that country.

Lastly an international case worth citing where the policy has been effective is in Columbia where the Ramsar Convention was ratified by the Columbian congress. Before this, the rate of wetland loss was alarming in that 400,000 hectares of wetlands were lost in Delta Estuarano in 1998 and 399,000 hectares in Lacochoa in 2001 (Sanchez *et al.*, 2007). But with the issuance of wetland guidelines in the country in 2001, more than 50,000 hectares have been recovered in Bogota metropolitan area and more than 400 hectares have been added with the help of the World Bank.

According to the RCB (1999) an implementation strategy was adopted in 1995 and the policy is now being implemented at the national, district and community levels. The main difficulties are encountered during the implementation and include: A legacy of previous policies which encouraged drainage of wetlands. They viewed wetlands as wastelands therefore allowing certain activities to be carried out there and this affected them.

There is also lack of alternatives to unsustainable use of wetlands. This was exacerbated by the collapse of such cash crops as cotton leading local communities to turn to rice growing as a cash crop.

Development pressures and the resultant conflicts with wetland conservation especially in the urban areas. No wonder Buye, (2005) emphasized the need to manage these wetlands that are still being degraded and drained in urban areas.

2.3.8 Awareness of communities about wetland policies

According to Muthoka *et al.*, (1998) in order to create awareness in the masses on aspects relating to wetland policies the following concepts ought to be used. First is ecological level where ecological concepts provide a learner with sufficient knowledge to make sound environmental decisions. Second, conceptual awareness where issues and value concepts are individually and collectively imparted. Third investigational and evaluation level where there is development of cognitive processes and development of skills necessary for investigating issues and finding alternative skills and fourth there is environmental action skills where education involved helps in application allowing necessary action for the maintenance of life and the environment.

Health community partnerships have improved and expanded facilities at 11 wetland interpretive centres across Southern Ontario including new board walks, viewing platforms and signs designated to help raise the public's awareness of how wetlands contribute to a healthy natural environment (Braunne, 1994). Some wetlands also act as visitor centres for education programmes. In Uganda's case the national environment management authority has collaborated with the national curriculum development centre that has been instrumental in developing the environment education curriculum and this is bound to yield tremendous results for the good of the environment.

Urban litter (alternatively called trash, debris, flotsam, floatables, gross pollutants rubbish or solid waste) was a major problem in South Africa. It collected in public areas and was transported by the wind or storm water runoff into the drainage system of which wetlands are inclusive and this was overcome by creating awareness so that people avoid it being dumped in unwanted places (Armitage, 2009). Such attitudes are vital for Uganda's wetland policy.

A success story of how scientific knowledge can be used to effectively manage water resources is in Northern California. The CALFD Bay delta programme aimed at addressing water supply, reliability, restoring ecological conditions, provision of drinking water and maintaining the levees in the Sacramento-San Joaquin Delta of Northern California. It achieved its goals because there was interaction between research and management communities. It also embraced public dialogues and peer review as a means of creating awareness among the communities (Taylor *et al*, 2009).

In fulfilling its duty to promote public awareness as required by the statute (Section 7(1) NEMA is legally required to produce the state of the environment report biennially, while districts are required to do so annually. This is a drive to create awareness between policy makers and people at the district levels just as radio broadcasts target the general public with particular emphasis on wetland management.

2.4. Enforcement of environmental concerns and/or crimes in Uganda

Kaggwa, (2006) noted that not so long ago, police and environment personnel were regarded as strange bedfellows, not only in this country but the world over. With police handling violent crimes such as murders, robberies and rapes, environmental agencies such as NEMA are busy solving environmental problems and or crimes alone. Kaggwa attributes this to institutions among other factors. However, Kaggwa (2006) observed that times have changed and it is being increasingly realized that environmental crime is a threat to public safety and security. Therefore, the police as the institution mandated to maintain law and order and in particular the CID, the principle agency responsible for investigating all crime cases in the country including those of environmental nature, has a central role to play in containing environmental crimes. To effectively play this role, environmental concerns must be fully mainstreamed into the policies, plans and programmes of the Uganda police force.

Environmental mainstreaming occurs when conservation and sustainable use of environment and natural resources is integrated into the different levels of government, institutional or establishment legislations, policies, plans and programmes of the police and relevant actions are taken at the national, sectorial, local and community levels to

support their implementation. Therefore environmental mainstreaming in the police refers to incorporating environmental concerns in the planning process, policy formulation and programmes of the police and taking relevant action including budget to support implementation. To the police it implies understanding the public safety-environmental implications of not taking the right actions and adapting the core activities of the police force with the realities of those issues.

2.4.1 Roles and responsibilities of the police in environment management

According to Kaggwa, (2006), the following are the roles and responsibilities of the police force with respect to the environment; detection, investigation and causing prosecution of environmental crimes in courts of law, monitoring and enforcement of compliance to environmental laws, regulations and standards such as effecting evictions from sensitive ecosystems such as wetlands, river banks and lake shores, developing enforcement strategies against environmental crimes, arresting environmental offenders just like any other criminals, increasing awareness of environmental crimes in the country and their threat to public peace and security, sensitizing and raising awareness of the Uganda police staff on general environmental issues including environmental crime as a threat to public safety, strengthening national and international linkages in environment and natural resource management and exchanging information with NEMA, the Directorate of Public Prosecutions (DPP) and other partner organizations, mainstreaming environmental concerns in the planning process, policy formulation and implementation of the Uganda police force program and developing guidelines for investigation and prosecution environmental crimes.

2.5 Other Wetland conservation policies across the world

2.5.1 The California wetland policy

According to the California Resources Agency, (2002) the California wetlands conservation policy's goal is to establish a policy framework and strategy that will; ensure no overall net loss and achieve a long-term net gain in the quantity, quality, and performance of wetlands acreage and values in California in a manner that fosters creativity, stewardship and respect for private property, reduce procedural complexity in the administration of State and Federal wetlands conservation programs and encourage

partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetlands conservation and restoration.

This policy has 3 elements, which are the levels and means of implementing of the wetland policy in California. They are the State-wide policy initiatives, geographically based regional strategies and an interagency wetlands taskforce.

The State-wide policy initiatives include; State wide wetlands inventory, support for wetland planning, improved administration of existing regulatory programs, strengthened landowner incentives to protect wetlands, support for mitigation banking, development and expansion of other wetlands programs and integration of wetlands policy and planning with other environmental and land use processes.

The regional based strategies divide California into three geographical regions in which wetland programs can be implemented, refined, and combined in unique ways to achieve the goals and objectives of the policy. These strategies fall into the following geographical areas of; the Central Valley, San Francisco Bay Area, and Southern California

The regional projects identified in each of the above areas serve as pilots for implementing the policy. The projects permit state government to tailor state-wide policies and programs to local conditions. This helps the State learn what works and what does not, and can be implemented in those parts of the State where there is a high likelihood of success and this helps sustain public support for the program over time.

The interagency wetland task force on wetlands directs and coordinates administration and implementation of the policy. The task force is comprised of senior administration officials representing the broad range of interests on wetlands issues. This taskforce is advisory to the Governor and helps resolve any inter-agency conflicts on wetlands. The taskforce also helps resolve inter-agency conflicts on wetlands. The different stakeholders in the implementation of the wetland policy in Uganda need to adopt and localize such techniques that have worked internationally.

2.6 Local community attitudes and perceptions towards wetland conservation

Globally, people have different perceptions and attitudes towards wetland conservation. Attitudes refer to opinions and feelings that people have. An attitude is a state of readiness, a tendency to act or react in a certain manner when confronted with certain stimuli. Attitudes are reinforced by beliefs that will lead to a particular form of behaviour and contemporary public attitudes reflect today's environment. One's attitude can be read out of his responses. Oppenheim (1984) showed that attitudes may be held with great or less vehemence, may be clear and will be organized, diffuse or vague, into deep superficial, latent views held strongly. What is uppermost in the respondents mind may not amount to a fair representation of his collected thoughts on the subjects.

Community beliefs and feelings towards wetlands depend on the value attached to these resources. However, not all the benefits reach the vast majority of the population. For example a few people can do crafts, livestock is owned by limited individuals and firewood is harvested by women. Oonyu (2001) showed that although the local community depending on wetland resources is increasing, presently the population of those benefiting from their use is relatively small and this influences peoples' attitudes towards the conservation and management of wetlands.

On the other hand, a number of communities in Uganda have appreciated wetland values. For example at one time local people stopped a petrol station project, which had started filling part of the Lubigi wetland in Uganda that were preparing to deny them of their highly treasured water source. After the numerous sensitization and workshop activities by the NWP, Jinja municipality council realized the need to protect the remaining wetlands (Reint Bakema & Lucy Iyango 2000).

It is of vital importance for wetland conservation and management that the present attitudes and perceptions of Ugandans should be changed (MoNR, 1995). WID, 2001 pointed out that one of the lessons learnt for the experience of 10 years of activity aimed at wetland management is; political and public interests must be engaged by using fact based local comprehensible and well presented facts. Knowles (1994 & 1995) and Chambers (1992) cited in Oonyu show that this could be through empowering the local

communities to initiate, define project goals and objectives and to control and implement its activities. The Inyibiba Lilies project of Khayellitsha swamp of South Africa was initiated with little regard to the needs of the local community. As a result, the project is now experiencing a number of difficulties (Oonyu, 2001). Members of Kitanga wetland fishpond management association (KWFMA) in Kabale district through community work have been able to strengthen their linkages between community-based organizations (CBO's) and the district administration. After realizing the work done by these members, NWP and Kabale district handed over full management of the site activities to the community (Reint Bakema & Lucy Iyango 2000). Oonyu, 2001 indicated that the low levels of local community participation in wetland conservation can be attributed to the negative attitudes towards wetlands and the use of non-participatory approaches by government departments and NGO's. Oppenheim (1984) indicated that everything in life depends on attitudes and attitudes are so important in the field of social change like education, fashion and communication. He concluded that we become particularly aware of the strength and pervasiveness of attitudes when we try to change them through process of communication, advertising, education, conversation and brain washing.

Public awareness is therefore essential in creating positive attitudes and commitments towards conservation and sustainable utilization of wetland resources (Nsubuga, 1978; MoNR, 1995). For instance the development of the Jinja by-law 2000 and the case of Lubigi community stopping the construction of a petrol station in the wetland indicates that people are aware of wetland values and have realized the negative effects of wetland degradation. Awareness education is a dynamic phenomenon concerned with individuals, their social and physical environment and is bound up with active response of a living being in order to improve the art of living. Although both the knowledge and skills are important, they cannot be regarded in themselves as satisfactory aims of environmental conservation. A sound practice on the ground is likely to show the result of attitude change as an effect of training and awareness.

Communities have high levels of awareness and willingness to conserve because they benefit greatly. Among these, some have positive attitudes, and believe in conservation and act positively. Others do so by following politely because they always want to look positive and pleasant (Nanyunja, 2001). Some people have positive attitudes but degrade

wetlands due to unavoidable circumstances like need for economic survival. Others have completely negative attitudes but fear the restrictions and laws once caught. Many users are concerned with how they get along with life without finding out whether they have adapted well to the environment. Luwum and Acuba, (1998) confirmed this by reporting that many people who are endangering our wetlands are not aware of their negative impacts they are having on the wetland and on the wetland benefits.

Furthermore, IUCN (2000) has shown that wetland degradation is due to such factors as low levels of household income and education, direct dependence on wetlands and lack of alternative use of wetlands. With such a perception, the users of wetlands cannot easily appreciate the harm of their activities, especially in the short run when wetlands still provide these resources.

The world commission on Environment and Education cited in Dugan (1990) indicated that pressure on resources increase when people lack alternatives. This shows that even if people have positive attitudes, this may not automatically change their behaviour and character. According to IUCN (2000), Kampala district had considerable hostile attitudes among the population towards wetlands. People attribute problems to existence of wetlands than to human activities on the wetlands. Luwum and Acuba, (1998) point out a time when a Medical Professor accused wetlands of doing more harm than good by harboring disease-causing vectors. It was then clarified that wetlands in their natural state are never breeding places for vectors, but the human activities in the wetlands have led to such problems. It was further clearly indicated that if man does not use wetlands as public toilets, they would never cause dysentery or cholera.

According to the President of Uganda, abuse of wetlands is an attempt to cut the hand that feeds us. In the districts of Tororo, Pallisa and Mbale wetlands have been degraded due to rice growing and dry season cultivation. NWP (1999) showed that while addressing the question of whether rice cultivation in wetlands is harmful to wetland ecology it is necessary to bear in mind the fact that rice provides seasonal food to at least 25% of the farmers in areas where it is grown. However, potential users and abusers can become guardians when they perceive economic benefits of wise use management to be greater than alternative activities that abuse and degrade wetlands. In other words,

effective community participation requires project design implementation and monitoring largely to be done by members of the local community themselves. In support of the above statement NWP (1999) indicated that voluntary support and willingness of the local people to obey the law is necessary in order to promote sustainable wetland management. On the other hand, laws covering wetland and management are inadequate to protect the resource. In addition, people tend to believe that training and awareness programmes intend to stop them from using and working in the wetlands.

Poor interpretation of wetland laws has worsened the situation that wetland laws, Acts and policies need to be well defined and explained to the community in order to avoid such misconceptions. For instance, the land Act (1998) cited in NWP (1999) shows that wetland cannot be owned by any person, but lack of ownership does not mean a person or community cannot use a wetland to obtain goods and services or other benefits. Any person intending to develop an area of wetland more than 0.25ha (50x50meters) is not permitted to do so unless s/he carries out an EIA and NEMA approves for their own safety. Some people think that conservation officers are in an exercise of accumulating money and wealth in this work.

This prompts them to ask for payments in order to provide vital information to these officers. In Khayeltsha wetland of South Africa, large families (508 and more members) support wetland conservation because they are poor and would find it harder to settle in other places (Oonyu, 2001). In addition, Busuulwa (2000) showed that 68% of the respondents in Kinawataka wetlands have a perception that wetlands are good and should be conserved because they are free providers of resource. This implies that they will not support any message that intends to remove them from the wetland. He adds that the majority of the people in Kinawataka believe that wetlands belong to the government and are not ready to abide by any operations made to stop them from using the wetland because it is public land. Many Kinawataka respondents (48%) had the view that government should stop the establishment of factories because the owners' access land through the government and the pollution level of factories is higher than that of individual farms. In addition the community of Sango Bay in Rakai district expressed the views that they don't need assistance from the government over issues of wetland use since they had lost trust in the government itself because it was also involved in wetland

degradation (Nanyunja, 2001). This is a challenge to the government since it has the leading role to play in the conservation and management of these wetlands (MoNR, 1995).

In some areas, members take the role of wetland management to be the responsibility of wetland organizations alone (Oonyu, 2001). Such beliefs cannot change people's attitudes towards conservation unless serious sensitization is done. Under such circumstances, force and pressure can be applied to protect the wetlands. Apart from levels of awareness and attitudes other factors affecting wetland conservation include: wetland ownership, lack of land, belief that wetlands are fertile, ignorance, the high number of valuable resources in the wetlands, famine and droughts making people resort to wetlands, government benefits from taxes. In addition, social economic hardships can also change ones attitudes towards conservation. For example people might like to move out of a wetland but become unable due to lack of money to buy land elsewhere. They become tied up by unavoidable circumstances and become willing to work towards the conservation and management of wetlands. In the same vein the reasons for the negative attitudes can motivate the majority of the local community to improve the current appalling situation. For instance, Oonyu (2001) showed that the majority (76.7%) of the respondents advocated for the conservation of Khayelisha wetland in South Africa in favour of ending their children's suffering with diseases.

2.7 Wetland programs assisting in wetland conservation

2.7.1 The Wetland School Festival

The wetland school festival is part of the wider activities to promote wetland awareness in schools especially amongst children and teachers, in order to promote wetland education (Sendugwa, 2001). Through the school programme, WID has annually supported festivals with a view of ensuring that schools embrace wetland management issues in their curriculum. A festival is an organized set of special events such as music performance or plays usually happening in one place (Cambridge international dictionary). Training and awareness programs are tools for developing information systems including both technical and institutional structures through which information is produced and used. According to the Longman dictionary of contemporary English (3rd

Edition) training refers to teaching skills of a particular activity. In addition it refers to teaching or implanting into somebody correct behaviours. The festival among other things is made to sensitize communities about the wetland policy, wetland values and sustainable management (Sendugwa, 2001; Bunoti 2002). The NWP is responsible for providing transport, meals, adjudication fees, teachers allowance and press coverage. The schools are responsible for training children and providing costumes while the district Education and Environment Officers are responsible for coordinating the whole exercise and invitations.

Ngaku, (2002) shows that the wetland programme in collaboration with wild life clubs of Uganda and the school education broadcasting unit, Ministry of Education and Sports organized a series of radio programmes to target the upper primary schools (P5-P7) which later made the community aware of environmental issues. The NWP staff can organize meetings with the District Education Officer and Environment officer for the purpose of introducing the idea of initiating wetland education (wetland school programme) in selected primary schools in the district. After reaching a compromise, then a teachers' workshop is conducted to introduce them to wetland management issues (Sendugwa, 2001). In the workshop, areas like definition and concepts of wetlands institutional framework of WIID, wetlands and the law, benefits from wetlands, problems faced by organizations, strategies for wetland education in the district and organization of the school festival are all discussed. It is through the proceedings of these workshops that the wetland school programmes operate. Support monitoring is always made afterwards to check on the progress made since the workshop. At every stage of competition the winners are given presents. The final stage of the competition is at the district to crown it all with speeches on wetland degradation and advocacy for wise use. The festival is usually an annual event. Wetnews Bulletin Vol.4 Issue 1 shows that in March 2001, WIID organized a wetland music festival in Kumi district. The festival attracted 18 schools from 3 counties of Kumi namely; Bukedea, Kumi and Ngora. Six schools competed per county and the schools that won represented their county in the final festival at the district. The theme of the festival was "Schools and communities in wetland wise use".

Demonstration of wetlands abuse was done through quite educative and informative plays. The importance of festivals became very realistic at such incidents especially at particular provocative and educative occasions when children question their parents through drama why they want to deprive them of wetland benefits through irresponsible uses. Luwum and Acuba (1998) reveal part of the message delivered was through songs. They further go ahead to confirm this by stating that at the end of the day many people were touched and the Vice Chairperson of Kumi L.C.5 Mrs. Ilaborot observed at one time when all her wetlands were intact there were no regular droughts as is the case today.

Pilot districts participating in school wetland festivals include Kabale, Masaka, Pallisa and Kumi. All these districts have a number of pilot schools in the wetland festival scheme. Kabale had 7 schools; Kumi had 16, Pallisa 10 and Masaka 5 schools. The programme targets schools at the start and those near to the wetlands because it is believed that the nearby community uses the wetlands at the same time to send the children to these particular schools near their homes. There is a plan to extend the wetland programme to schools in other districts and to secondary schools as well. It was believed that the programme would promote wetland awareness to the children, their parents and the general community. WID has also sustainable to provide long-term multiple services and products without detriment to natural wetlands values and functions. These are Limoto wetland project in Pallisa, Kitanga wetland project in Kabale and Kyojja wetland project in Masaka.

2.8 Wetlands as sources of income for adjacent communities

As communities derive their household incomes from a resource it must be sustainable i.e. meeting the needs of the present generation while not compromising the ability of the future generation to utilize the same resource (McNeely & Scher, 2001). Livelihoods of people around the world are under threat owing to environmental degradation, rapacious economic development and implications of global processes. Today 53% of the world's six billion people live in rural areas and depend on natural resources for their livelihoods (IUCN, 2001). In Australia, wetland plants provide an important food for the Aboriginal communities. In some wetlands, flood plain eucalyptus trees are harvested (e.g. river red gums) (Australian Nature Conservation agency, 1996). Many people make their

livelihoods from wetlands of arid zones of the world. Wetlands of Australia's arid zones sustain livelihoods of pastoralists reliant on the grasses and aquatic plants which flourish with the floods and provide food for livestock. Some farmers plant wheat and other crops on the flood plains as water recedes (Morrison and Kingford, 1997). The inner Niger delta south of Timbuktu provides support for fishing, grazing and flood recession agriculture (Summer, 1985). Uganda's wetlands consist of permanent and seasonal swamps, swamp forests and areas of impeded drainage and are of considerable importance economically, socially and ecologically. They support a wide variety of biophysical and socioeconomic functions and tradition in Uganda. They have been important to local communities providing open access to various resources including a diversity of plants from which communities derive benefits such as craft materials, building materials, pasture and food among others. The benefits can be categorized into direct values, indirect values, option values and non-use values (MoNR, 1994). Historically wetlands have been the genesis of civilization and development (Dugan and Jones, 1993). Wetlands monetary benefit is an important contribution of wetlands to communities, a research carried out by Uganda national wetlands programme revealed that even communities exposed to wetland information for several years majority (i.e. 66%) indicated economic benefit as the major importance of wetlands to the communities (Luwum and Acuba, 1998). Wetland resources can to some extent buffer the effects of poverty. Poor rural communities living close to wetlands and having access to a variety of free wetland resources such as reeds, thatching grass, timber, fish, crabs and edible plants are often healthier and have a better quality of life than similar subsistence communities who do not have access to wetland resource (SARDC-IMERCSA, 1999-2000).

CHAPTER THREE

3.0 Methodology and the study area

3.1 Research design

The research was carried out using qualitative and quantitative approaches to adopt a cross-sectional research design. The design was appropriate for the study because data was collected on many respondents at one point in time. This in turn reduced costs of data collection and the entire research. The cross-sectional design also enabled the researcher to study in both permanent as well as seasonal wetlands; people living near and far away from wetlands and people living in areas with wetland programmes and those without wetland programmes. This is because the different situations above have people with different views about wetlands and the wetland policy.

3.1.1 Study Population and Sampling

The study mainly targeted residents of Kabale district. Opinion leaders were also consulted and these included LCs, civil and public servants.

The study adopted a purposive sampling procedure (permanent and seasonal wetlands as well as people living near and far away from wetlands) because it was easy to undertake and be representative. Secondly, it enabled the researcher to reach the targeted sample quickly. The study targeted 120 respondents distributed as 100 residents and 20 opinion leaders (WID, NEMA and Local Environment Committee Officials).

3.1.2 Data Collection

The study used primary data. Primary data was collected using both quantitative and qualitative approaches. Quantitative data was collected using a questionnaire survey. Then qualitative data was obtained through interviewing key informants, observation, and photography using a still photography camera. Considering methods of data collection mentioned above, the tools of data collection were questionnaires and interview guides. Data was collected by Research team comprised of the researcher himself assisted by two undergraduate male students (herein referred to as Research assistants) from Bishop Barham University college in Kabale. The two were first sensitized on

environmental/wetland issues for two days as well as aspects of the questionnaire for them to be knowledgeable enough to capture relevant data.

3.1.3 The Questionnaire survey

Questionnaire was administered to randomly pre-selected respondents taking caution to reach the same number of males and females. The questionnaire took the form of open-ended questions and some few close-ended questions with the aim of getting the information in depth. Questions in English were translated into the local language (Rukiga-Runyankole) so as to make things understandable to the respondents. These questions were pre-tested using ten respondents and the results carefully analysed to make sure that the questions did not lose their originality through the translations. The questionnaire was used to obtain variable data concerning people attitudes to wetlands and wetland conservation, their awareness levels of the wetland policy, illegal activities still being practiced and those, which stopped, plus the effects of the wetland policy on wetlands and the people's household incomes.

3.1.4 Direct Observations

This method involved direct watching and recording of information so obtained. The researcher was actually involved in taking part openly so as to get additional accurate information to backup the already implied information from the questionnaire. This information helped the researcher to identify the status of illegal activities as well as conservation measures being promoted as a result of the wetland policy. This helped the researcher to be able to relate to what is known to support the findings.

Photography was another observation technique that was employed in data collection concerning the state of illegal activities, conservation efforts and people's household incomes due to the wetland policy. Photos have be attached for evidence and future research verification.

3.1.5 Data Analysis and Presentation

Quantitative data was analyzed using Statistical Package for Social Scientists (SPSS) and Microsoft Excel and presented using frequency tables, percentages and tabulations. From here descriptive statistics were obtained to make inference about the data. Qualitative

Data generated from interviews was categorized, interpreted and analyzed. This was backed by use of photographs to show a general picture of the information to be presented. The conclusions were stated basing on the frequencies and percentages from the calculated results.

3.2. The Study area

3.2.1. Location

Kabale District is located in south western Uganda between latitudes 1°S and $1^{\circ}30'\text{S}$ and longitudes $29^{\circ}18'\text{E}$ and $30^{\circ}00'\text{E}$ covering an estimated area of 1695 Km^2 (Grisley Mwesiwa, 1995). It is bordered by Kisoro District in the west, Rukungiri and Kanungu districts in the North, Ntungamo in the East and Rwanda in the south as shown in Figure 1. The total area of the district is 182,700 ha (NEMA, 1998).

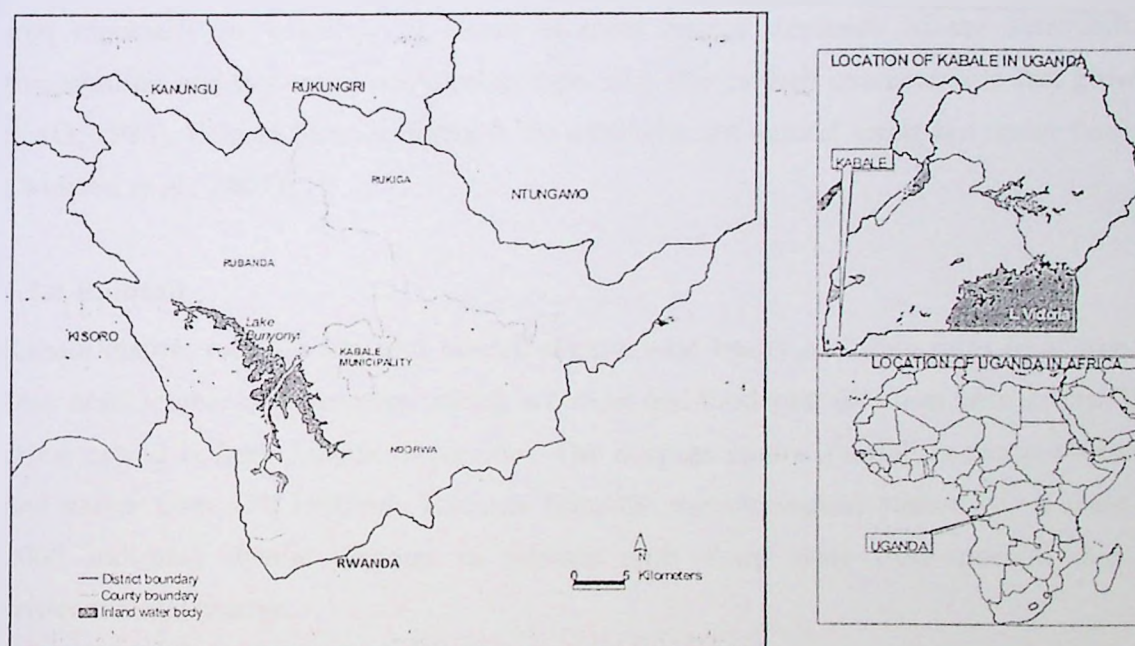


Figure 1: Map of Kabale District with its bordering districts

3.2.2 Relief and soils

Kabale district is located in Kabale-Rukungiri highland ecological zones (Wortmann and Eledu, 1999) with a hilly terrain lying between 1217-2347 metres above sea level. It is characterized by broken hills, dead arched rivers valleys and steep to gentle convex

slopes adjacent to reclaimed papyrus swamps (Aniku, 2001). The soils in the district are volcanic andosols and humic, dystic and entric nitosols and ferrasols usually fertile. However there has been dramatic decline in the soil fertility due to continuous cultivation (Bamwerinde *et al.*, 2000).

3.2.3 Vegetation and agriculture

Kabale highlands were formally enshrined by bamboo forests, mahogany spp, *Acacia mearnsii*, *Erithyrinia abbyssinica*, *Markahamia lutea*, *Cuppressus licitanica*, *Ficus spp* and *Mitragyna spp* in swamps) but were cut down to expand land for agriculture (Morison, 1968). The middle slopes are covered by upland bracket vegetation (ferns) creepers while the upper slopes are covered by grasses such as *Digitaria scaluram* and *Pennisetum perpreum* (Aluma, 2001). Eucalyptus is the most dominant tree spp in the area especially in woodlots to meant to meet energy demends of the surrounding communities and to control soil erosion especially due to their characteristic fast growth (FAO, 1985). Echuya bamboo forest is the only remnant natural forest but under threat (L.wakuba *et al.*, 2003)

3.2.4 Rainfall

Kabale district receives bimodal rainfall regime with heavy and long rains in March to May and October to November wihih are short and moderate for short term crops. The driest period is from June to September. The average annual rainfall is about 1000mm and varies from 720-1500mm. Records from the meteorological station of Kabale in 2000 indicated drastic changes in climate with sharp rises from normal due to environmental change.

3.2.5 Temperature

The District is generally cold with daily temperatures modified by altitude ranging from 14°C to 18°C indicating a diurnal range of 4°C and an average temperature of about 16°C. A rise in temperature to a maximum of 30°C has been observed and attributed to massive deforestation and and swamp reclamation for agriculture and diary farming (Kabale meteorological station, 2000). Nights are cold while mornings in most valleys and

higher grounds are foggy and sometimes chilly due to the mist that stays up to around 10 o'clock.

3.2.6.Socioeconomic background

Kabale has a high population density and population growth rate of 2.2% with nearly 95% of the people as rural dwellers (Ministry of Finance, Planning and Economic Development- MFPED, 2004). The main tribes in Kabale are Bakiga, Bahororo, Banyankole and Bafumbira/Banyarwanda. Land scarcity in the region is a major problem that has resulted into massive migration of Bakiga to other parts of the country for land. More than 94% of the people live in semi permanent structures of wood and 98% wood biomass for energy has fuelled massive deforestation and land degradation (Hamilton, 1987).

3.2.7 Land use activities

The land system in Kabale is the Kigezi crop montane system. Land holdings are less than 1 ha on average usually fragmented uphill. Continuous cultivation and intercropping characterize the system with unintentional fallows (Bamerinde *et al.*, 2000). Agriculture is the central economic activity in the area involving crops like maize, sorghum, beans, sweet potatoes, peas, wheat, vegetables and fruits like pineapple, papaya, passion fruits, avocados and temperate fruits. Livestock keeping is not a major activity involving small herds of cattle, sheep and goats due to limited grazing land. Dairy farming is practiced on a small scale in valleys in what used to be swamps but were reclaimed. Other economic activities include fishing and tourism on lake Bunyonyi and mining of wolfram and tin in Muko subcounty.

CHAPTER FOUR

4.0 Results and discussion

4.1 Background to the Respondents

4.1.1 Gender distributions of the respondents

A total of 120 respondents were reached out by the research team that comprised of the researcher himself and two assistants. This study targeted respondents living near wetlands and great care was taken to reach almost the same number of women and men. However it was realized that the research team was able to reach out to 38% males as compared to 62% females as showed by Figure 4.1. The reason was that since the wetlands were mainly in rural areas, more women would be found at home doing home chores than the men.

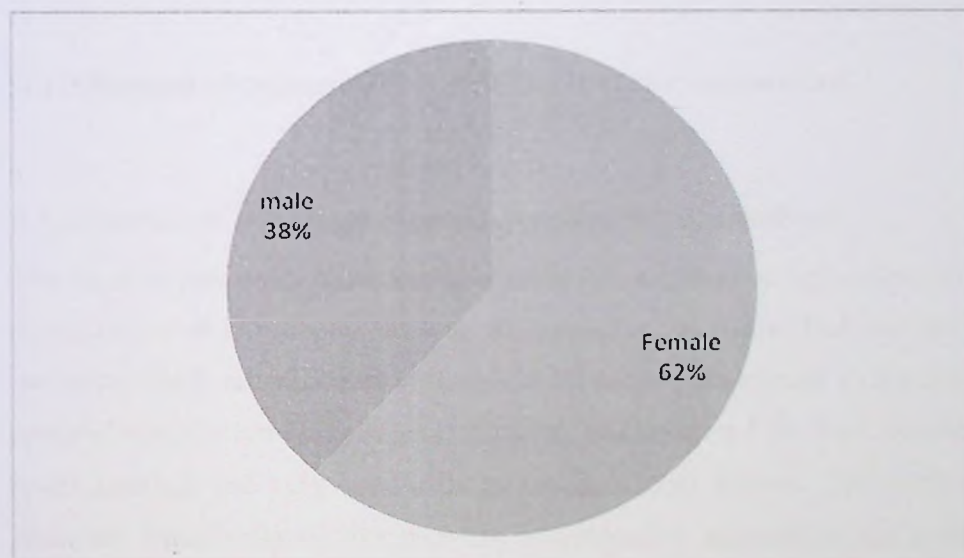


FIGURE 4. 1 4.1.2 Education levels of respondents

4.1.2 Education levels of respondents

All the respondents were asked to state their highest levels of education attained. From Fig 4.2 a significant number of respondents had not gone to school at all i.e.12% , while the largest portion of the respondents i.e. 63% had attained primary level of education.

There were very few respondents who had completed tertiary institutions. In general terms the level of education is very low and is expected to have a greater effect on the attitudes, beliefs and perceptions to wetlands and wetlands conservation according to Oppenheim (1984) as shown in the literature review.



4.1.3 Sources of income and income levels of the respondents

4.1.3 Sources of income and income levels of the respondents

The main source of income is overwhelmingly subsistence agriculture since the levels of education as shown above are low. This is also due to the fact that the majority of the wetlands which are still surviving in Kabale district are mainly in the rural areas (refer to wetland distribution in Kabale i.e. Chapter one section 1.3). Few people are engaged in crafts making and very few are teachers and local traders. The craft makers use raw materials from wetlands like papyrus. So altogether agriculture and crafts make over 90 % of the respondents and this translates into the wetlands being at the centre of every community member’s life.

The income levels of the respondents per annum are summarized in Figure 4.3. According to this figure, the majority of the respondents are low income earners and most likely from agriculture. This is so because even when there is a rich harvest of agricultural produce, say potatoes, which are mostly planted in the wetlands, the prices

move incredibly low as they are mainly set by the middlemen based in towns. In the long run it is mainly these middlemen who earn all the profits from the farmers' sweat leaving the farmers to earn marginally from their hard earned produce. In many cases when the rains are unpredictable, the wetlands where these crops are planted flood heavily damaging all the farmers produce thus worsening the level of income. Given the fact that there are few salaried people (teachers) near wetlands, then in such case of flood damage to crops, the levels of income are pushed down further as seen from Figure 4.3.

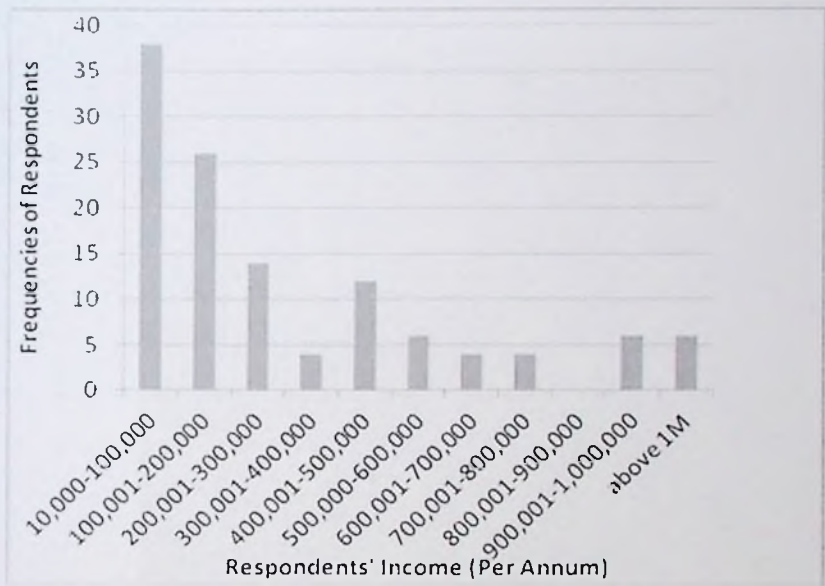


FIGURE 4. 2: Income levels of the respondents

4.1.5 Age class of the respondents

According to the respondents enumerated, the majority (28%) were mainly the youth in between 21-30 years and 31-40 years as shown in figure 4.4. However this agrees to the general observation nationwide that the majority of Ugandans are mainly the youth (Population and housing Census, 2002). It should be noted however that these are the very strong and energetic people who can manage to drain a wetland for successful wetland conversion or degradation since it requires a lot of energy. This explains why agriculture is the main activity done in the wetlands as the population to this is very readily available among other reasons.

Again as expected from the demographic population distribution in Uganda, this study also found that the old age population i.e. 61-70 and 71-80 years are as very few as 5% of the respondents each as shown by Figure 4.4. These very old people can not actively engage in agriculture and can only afford the less energy demanding activities like crafts which can be done when one is seated. This is why engagement in craft work is very minimal since there are fewer people to do this and are even too weak due to old age.

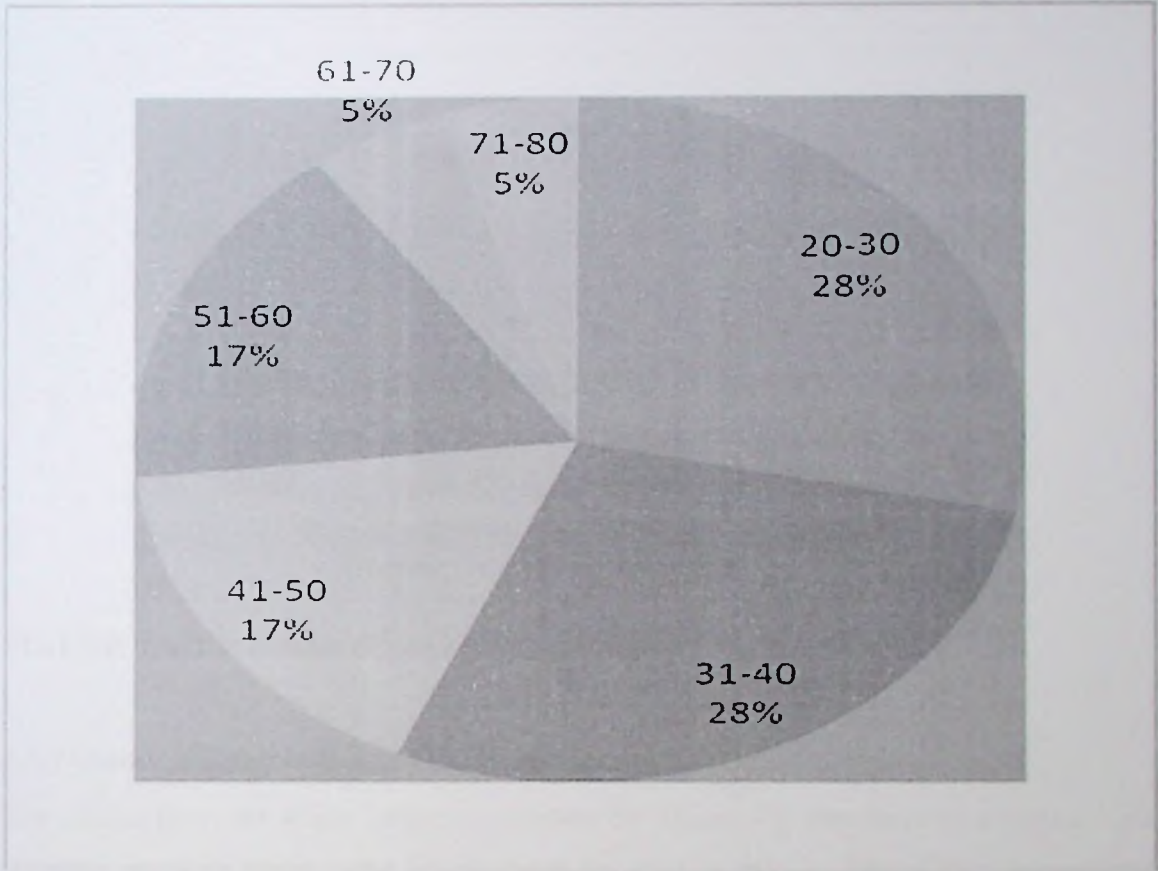


FIGURE 4. 3: The population structure of the respondents

4.1.6 Number of persons per household

Results from the field indicate that Kabale district has a high population as the number of persons per household is also high i.e.begining from more than 5 as shown in Figure 4.5. The figure shows the highest frequency at 57 % for households with between 5 to 8 people. This actually means that the food required for such a population is correspondingly high and in this case must be got from wetlands since the main land

scape is hilly and difficult for farming. The pressure on wetlands gets too much recognizing the fact that there are households with a much higher number of people per household i.e. 9 to 12 and even more than 12 people per household



FIGURE 4. 4:The number of persons per household

4.1.7 Status of Land holding of the Respondents

The results from the study indicate as shown by Figure 4.6 that there is a serious land shortage problem since some people have no land at all i.e. 2% of the respondents. According to Figure 4.5, the 2% of the respondents have over 5 people per household to feed and their main source of food is from agriculture. Therefore even those who seem to have some land i.e. both those having 1-3 acres and 4-7 acres of land are equally badly off as this land is definitely not enough.

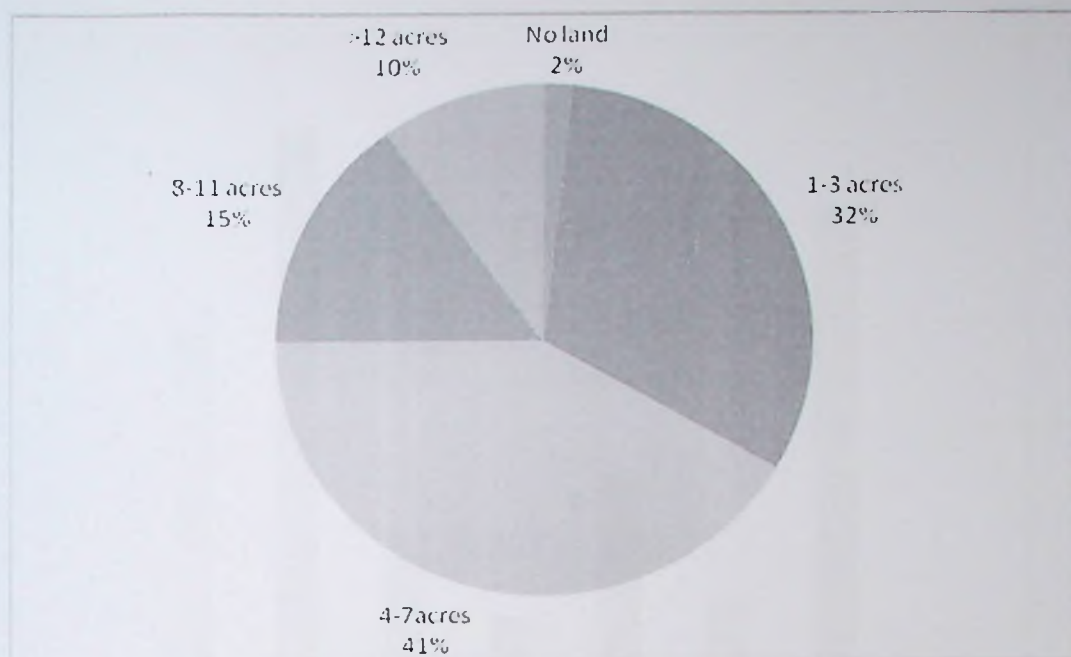


FIGURE 4. 5: Land holding of the respondents

Therefore close to 73% of the respondents (sum of those for 1-3 and 4-7) do not have enough land for their families. The majority of the respondents reported that they often borrow or hire extra land but sometimes there is no one around them with free land to be hired or borrowed. In fact only 10 out of the 120 respondents have enough land. This is a proportion of only 8.3%. This is compounded by the problem of land fragmentation where the land is not held together as a single entity i.e. scattered. This leaves the only available land near by for farming being the wetland. This obviously means that all this in immense pressure is exerted on the nearest wetland.

4.2 Wetland usage

For both communities that are far off and nearby wetlands, a wetland is a very essential part of every person's life in Kabale district. Wetlands are used not only for agriculture but also hunting, brick making and collection of water among others as portrayed in Fig 4.7 .

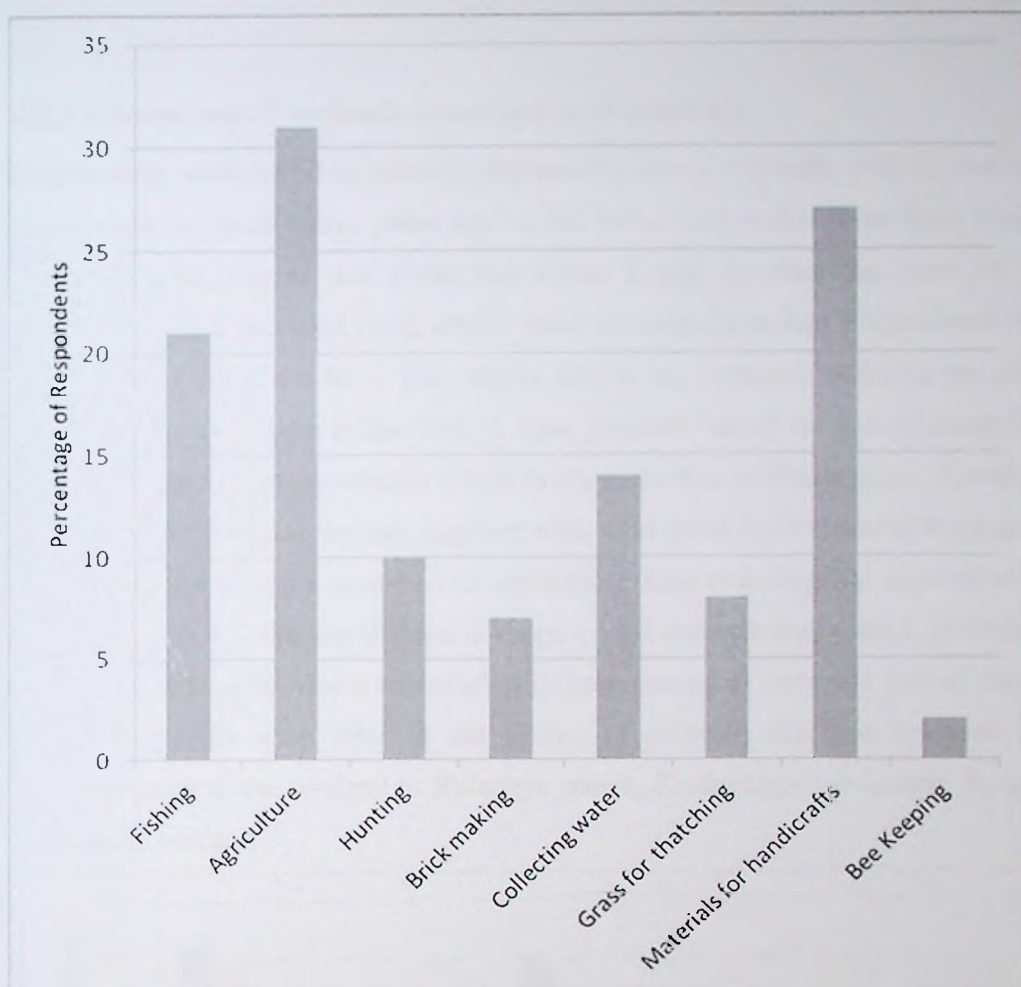


FIGURE 4. 6: showing present use of the wetlands

Agricultural use takes the largest percentage at 33% closely followed by handicrafts or weaving materials at 29% as these two have direct bearing to either food security or cash in people's pockets and sometimes both. Agriculture ranks highest because of land scarcity, the wetlands being fertile as compared to the hills and a bigger population to feed per household. Water collection stands at a mere 14% because it is not ranked highly as local people assume that water will always be there, the other reason being that this is in the villages where water is free (carries no price). Bee keeping is the least because it is still a recent activity only in Muko Sub County being promoted by *Nature/Uganda* so as to stop wetland burning and create non agricultural uses for wetlands use. This is aimed at reducing the pressure on wetland use.

4.2.2 Current use of wetlands compared to 30 years ago

Respondents were asked to compare the present use of wetlands with the way they used these same wetlands thirty years ago in the 80's. The results have been analysed and presented using Figure 4.8. From this figure it can be seen that save for grass for thatching houses and wild meat, all the other products have had a significant increase in their demand since the 80's. This shows that at the moment wetlands are more under pressure than they were in the 1980's. One possible reason for this increase in wetland pressure is the bigger population which is characteristic of this region (Kabale district). The grass for thatching houses together with wild meat have reduced because there has been a lot of wetland conversion to agriculture thus reducing the amount of grass for thatch as well as reducing the home range of the animals that would provide the wild meat. A case in point worth mentioning is the presence of only one pair of crested crane that the research team cited in the garden of potatoes that had replaced its former breeding ground- the wetland in Rutengye parish, Kashambya sub county for the case of Kaniabaha wetland.

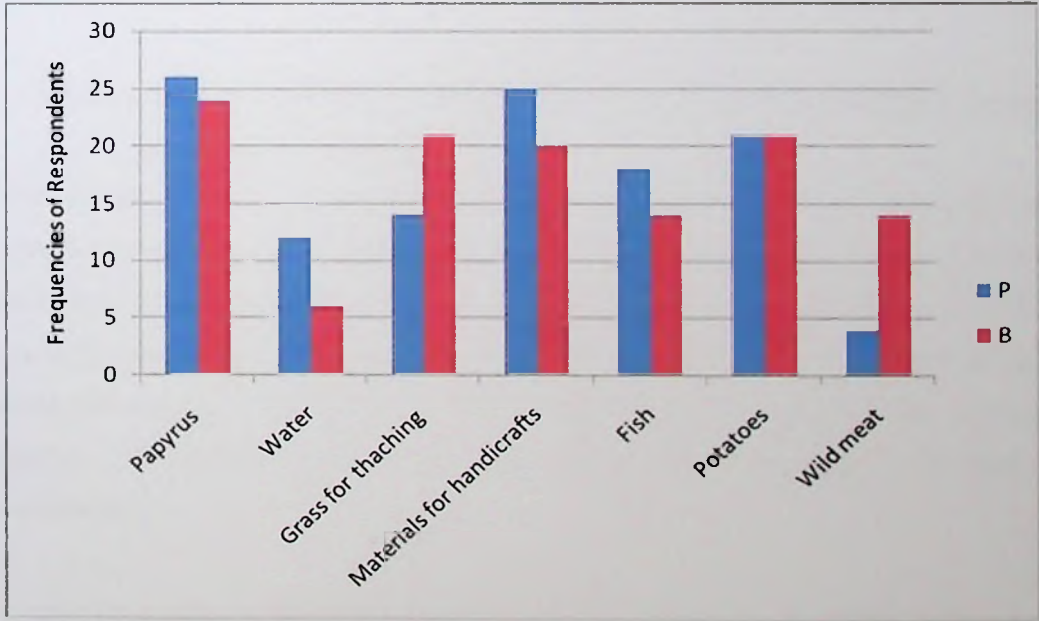


FIGURE 4. 7: A comparison of wetland usage before (B) and after the Policy (P)

4.3 Attitudes and perceptions towards wetlands and wetland conservation

Respondents were asked to indicate their views regarding wetlands and wetland conservation by stating whether chosen statements about wetlands are true or false.

(i) Respondents attitudes towards wetlands regulating rainfall and controlling floods

According to the respondents interviewed, 88% of the respondent believe wetlands regulate rainfall in their area while 99% of the respondents believe wetlands control floods. These respondents were able to relate the amount of flooding that would take place in the farther down stream areas in Kisiizi if the wetlands were either not there or interfered with. However these positive attitudes in of wetlands were not reflected in good wetland management as two bore holes in the area (Rutengye Parish) without any ater for the last 6 months. Despite these good positive attitudes there needed to be more sensitization towards wetland conservation for the community to work towards their god positive attitudes

(ii) Respondents attitudes and perceptions regarding wetlands being of low economic use and value

From the study conducted 83% of the respondents believed that wetlands by themselves alone were not of low economic value. Only 17 % believed that wetlands by themselves alone are of low economic value. Respondents were able to quickly tell all the various products they get from wetlands and thus acknowledging wetlands being of high economic use and value However they were quick to also ascertain how the quality and quantity of products were slowly going down due to the rate of wetland loss and degradation.

(iii) Respondents attitudes regarding wetlands being important only when people get products from them.

An overwhelming 99% of the respondents had consumptive and exploitative attitude to wetlands and wetland conservation which is negative to consertation of wetlands. This

means that according to these communities if a wetland did not give them any products it was not worth being there as a wetland. This is similar to the former policy where wetlands were good only if they were converted short of which they would actually be wastelands.

Respondents attitudes and perceptions of wetlands encroaching on peoples agricultural land. Seventy five (75%) of the respondents interviewed believed that wetlands encroach on peoples agricultural land every time they were overflowing. Its only 22% who had a positive attitude towards wetlands in this regard. Local people had not been sensitized enough to know that water always finds its level and in this case its usual flood level. It is actually this minimal 22% whose attitude towards wetlands was positive in this regard to realise that people were encroaching on the wetland instead of vice versa.

**(iv) Respondents attitudes and perceptions to wetlands being unhealthy places
habouring mosquitoes thus causing malaria, cholera and bad smell**

From the respondents interviewed 99% still believed that wetlands are unhealthy places harbouring mosquitoes and thus causing malaria and cholera plus being of a bad smell. This is another negative attitude very well compared with the views of the medical professor who also believed wetlands are unhealthy places with mosquitoes and thus malaria and cholera with a consequent bad smell (Luwum and acuba1998). Local people had not been told therefore that unless wetlands are not used as public toilets and dumping grounds, they wont be a source of bad smell, chorela as well as malaria

On a more general scale and finally respondents overall attitudes and perceptions towards wetlands and wetland conservation were found to have improved as suggested by Figure 4.9 because more than half of the respondents i.e. 53% had attitudes and perceptions favourable to wetlands and wetland conservation. However the 41% of the respondents whose attitudes are still unfavourable to wetlands and wetland conservation is still too big a proportion to have substantial wetland conservation to go on smoothly especially considering that wetland policy implememntation has been running for more than 10 years now. This means that the local peoples attitudes and perceptions are not to the mangnitude of refusing anybody who wants to deny them any se of the wwetland (

refer to the Lubigi wetland people in literature review who opposed a petro station project because they clearly understood that it was going to deny them benefits of their wetland

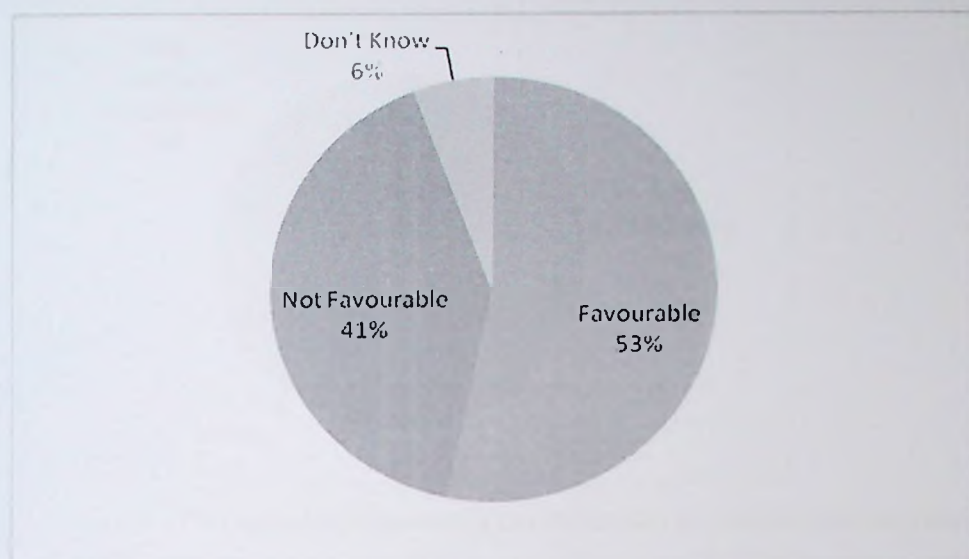


FIGURE 4. 8: Respondents attitudes and perceptions to wetlands and wetland conservation

There is the 6% of the respondents whose attitudes and perceptions are still in the balance (the don't know cases i.e. their attitudes are neither favourable nor unfavourable to wetlands and wetland conservation). It is more likely that these don't know cases could easily fall amongst those whose attitudes and perceptions are unfavourable to conservation due to the low levels of education of this area (Figure 4.2) and the high dependence on wetland based agriculture. This calls for more sustained sensitisation from both government and private partners. Below are number of reasons why such a large proportion (41%) have unfavourable attitudes towards wetland conservation. These ranged from fewer sensitisation meetings conducted to a thin presence of NEMA the lead agency in involving itself in sensitization.

4.3.11 Local peoples monetary contribution to wetland conservation

As a follow up to the respondents attitudes and perceptions to wetland conservation, respondents were further asked how much money of their own would be committed to

wetland conservation. The results of this inquiry are summarized and presented in Figure 4.10

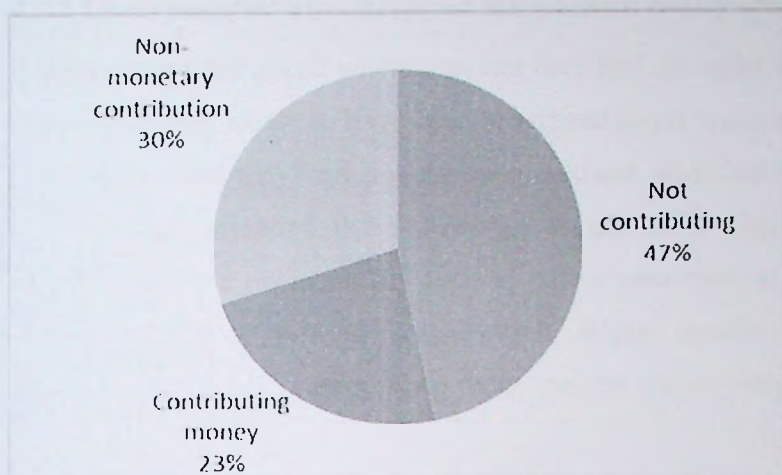


FIGURE 4. 9 Respondents monetary contributions to wetland conservation

Only 23 % of the respondents expressed willingness to contribute their own money toward wetland conseration if asked to do so. This monetary contribution ranged from 500 Ug Shs through 1,000/=, 5,000/= to 10,000/= U g shs. This ranges between 0.2 to 4 US dollars. Thirty percent (30%) of the respondents had no real money income to commit to conservation of wetlands but atleast they expressed willingness to contribute to wetland conservation by supporting conservation in a number of ways. These ways includedstopping encroachment on wetlands, forming groups, following laws and following up on illegal activities meted on to wetlands. Therefore there is a sizeable translation of the wetland attitudes to wetland conservation as reflected from these two categories of local communities contribution to wetland conservation.

However 47% of the respondents were not willing to commit any thing at all in terms of monetray contribution to wetland conservation. Some of these respondents would always refer to government as being the only agency to pay for wetland conservation alone. This shows a lack of translating of the positive wetland attitudes to wetland conservation which can even be a negative attitude to wetlands on the other hand of the wetland conservation continuum. Hence there still nedds to be a committed sensitisation action to reverse these unfavourable wetland attitudes.

4.3.2 Local peoples' attendance of the wetland policy sensitisation meetings

Respondents were asked whether or not they had attended wetland sensitization meetings from where they ought to have been sensitised about wetlands. Sixty percent (60%) of the respondents said they had not attended wetland sensitisation meetings at all while 40% said they had attended these meetings as shown in Figure 4.11. When 60% of the respondents have not attended wetland policy sensitisation meetings, then their attitudes to wetlands and wetland conservation might remain unfavourable or hostile to conservation as they remain in the older version where wetlands are only wastelands'

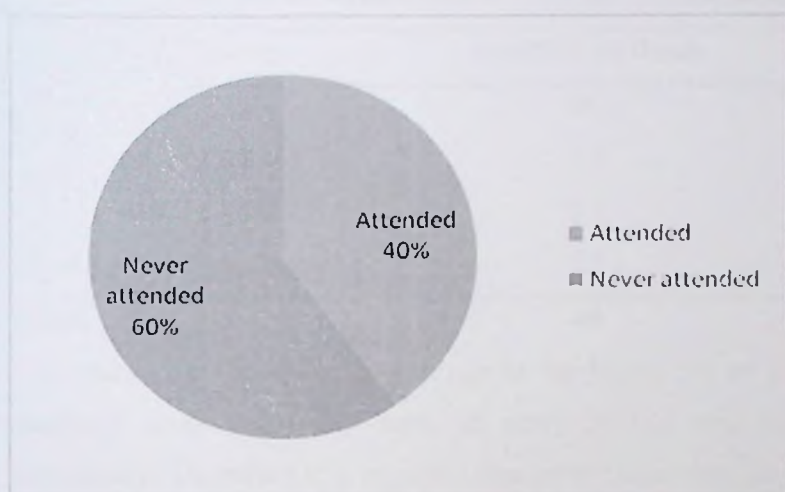


FIGURE 4. 10: Respondents' attendance of the wetland policy sensitisation meetings

When asked how many times the wetland sensitization meetings had been conducted in a year or a month, those who had attended these meetings had a number of differing frequencies of the meetings as summarized in Table 2. Clearly it can be inferred that much as these sensitisation meetings were not enough as they had been less frequently held for every one nearby the wetlands to have been adequately informed of wetlands and wetland conservation.

4.3.3 Frequency of the sensitisation meetings

All respondents were asked how often wetland sensitization meetings had been held and the results have been entered in Table 2. Thirteen percent (13%) of the respondents expressed ignorance of the frequency of attending wetland sensitization meetings. Others could not even tell whether the meetings happened once or twice either a month or a year. However 31% of the respondents were very clear on sensitisation meetings being held 3 to 4 times a year which is not enough to have a positive effect thus supporting Figure 4.10 that 60% of the respondents had not attended any sensitization meetings at all.

Table 2: Frequency of attendance of wetland sensitisation meetings.

Nature of frequency	Number of times	Percentage (%)
Don't know	06	13
Once or twice a Month	14	29
Once or twice a year	13	27
Three to four times a year	15	31
Total	48	100

The reason for the lower percentage in the frequency of meetings is the fact that these meetings were held way back in early 2000's and since then they had stopped completely. Therefore it is possible that even those who had attended these meetings had naturally lost the influence of such meetings. This further explains the low percentages of attitudes and perceptions of the communities since the sensitization campaigns had stopped completely for some time up to now. The only evidence the research team found for a once active sensitisation campaign was an old 2004 calender from NEMA in one of the respondent's house. According to the wetland policy, government is supposed to carry out wetland public awareness campaigns using mass media like radio and television plus circulating printed material like posters and leaflets to change peoples attitudes and perceptions. The research team never found any such materials in the area apart from the already mentioned callender.

4.3.4 Convening the wetland sensitisation meetings

Respondents were asked to remember who had called these sensitisation meetings and their responses have been summarized in Figure 4.12

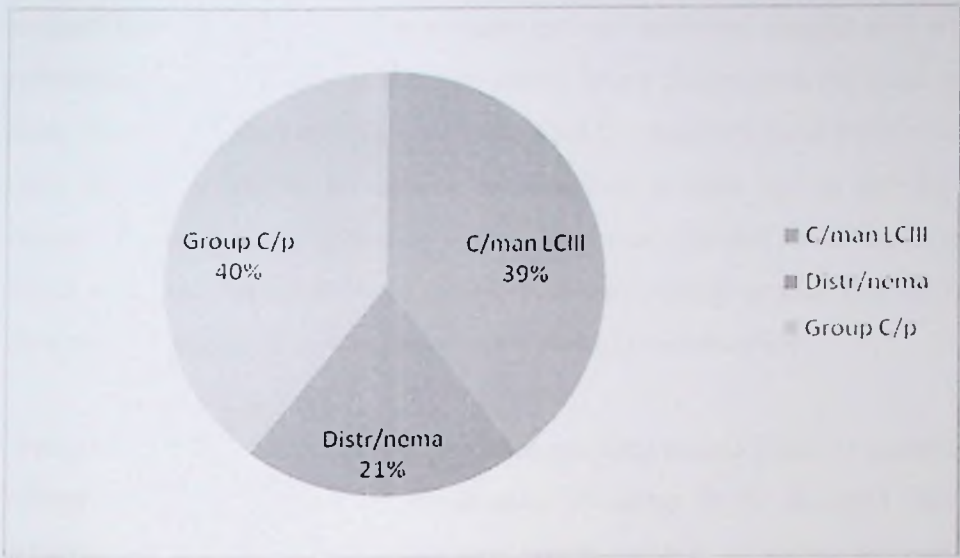


FIGURE 4. 11: People/entities/ Groups who are involved in the sensitisation meetings

From Figure 4.12, NEMA and district wetland officials were ranked least in involving the communities for wetland sensitisation meetings. The community is normally organized into a group or society and they have had their leadership for a very long time particularly those engaged in wetland farming. Each season of planting is preceded by a meeting to organize planting seed and measure out how much land is left untouched on each side of a central stream in the wetland. These meetings are usually convened by the Chairperson of the group. Almost every wetland has such wetland user groups that were formed even much earlier than the coming into force of the 1995 wetland policy. In Rubaya sub county for example if for any one reason a farmer is going to miss planting his piece of garden in the wetland, it is much better for him or her to hire it to the neighbor who can plant it. If this is not done and the piece of land is left without any crops, the owner will be fined 30,000 Ug Shs because animals which will come to graze in this empty garden will disturb the neighbours' field of crops. So this is why the group chairman for the society is ranked highly in inviting wetland sensitization meetings. The

chairman LCIII is accountable to his people most of whom get their income from wetland cultivation. So in order for him to remain relevant to his people he invites meetings with his/ her voters and addresses them on a sensitive topical issue and in this case it has to be wetland use. These LCIII Chairpersons are not technical people and are only peoples' representatives politically at the sub county level. Sometimes for them to be seen to be doing their work, they usually side with what the majority local people want and in most cases they have had to be against conservation in their bid to get the support of the majority for next times' round of voting. This was reported in all the seven sub counties which still have wetlands. It is therefore not surprising to find that LCIII chairpersons have ranked second in inviting people for wetland sensitization.

According to Oppenheim (1984) attitudes are deep seated latent or superficial views held strongly and so need a lot of sensitisation meetings to be changed. This could not be achieved to change the communities' unfavourable attitudes with such a minimal meetings conducted from NEMA's side. NEMA as the lead agency should have conducted more sensitization meetings than any other groups above since it has more informed technical personnel to change local peoples' attitudes and perceptions.

4.3.5 Local peoples' awareness of the 1995 wetland policy

Respondents interviewed indicated their knowledge of the prerequisite wetland policy that formed basis for the sensitization according to Figure 4.13.

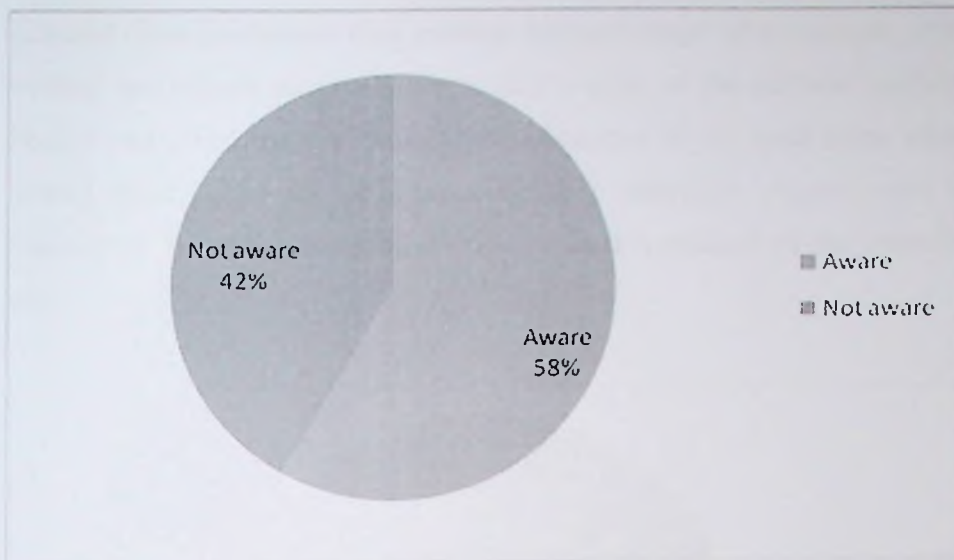


FIGURE 4. 12: Respondents awareness or lack of awareness of the policy

According to Figure 4.13, the majority of the respondents 58% are aware of the wetland policy while a sizeable percentage i.e. 42% is not aware of the policy. This is because NEMA which is the lead agency in wetland issues and is supposed to have carried out the main sensitization about wetland conservation has been found to have carried out the least sensitisation of the population. If NEMA had carried out enough sensitisation, leaflets, posters and brochures would have been distributed throughout the district to the extent that even those who don't know how to read or write or never attended the sensitization meetings would see such messages. Alongside the wetland sensitization campaigns was supposed to be the discussions of the guidelines to wetland use. These guidelines spell out how much portion of the wetland should be given out for group use or farming, the nature of agrochemicals to be used and to what extent. The respondents showed little knowledge of these guidelines to wetland gardening or farming as showed by figure 4.14. Only 17 % of the respondents expressed knowledge of the guidelines to wetland farming or gardening and these were mostly group chairpersons of wetland user groups. The group chairpersons should have received these guidelines during NEMA's minimal sensitization campaigns which have not been active for the last 8 years. The majority of the wetland areas have no wetland user groups and people still use the wetland on individual basis. In this case there were no active chairpersons to have

accessed these guidelines thus making the percentage of the people with guidelines for wetland use remain minimal. Worse still a copy of the wetland guideline seen was in English and given the low education background of the rural areas where wetlands are located, these guidelines remained technically unpopular. Against such background, the majority of the respondents i.e. 83% expressed ignorance of the guidelines for wetland use.

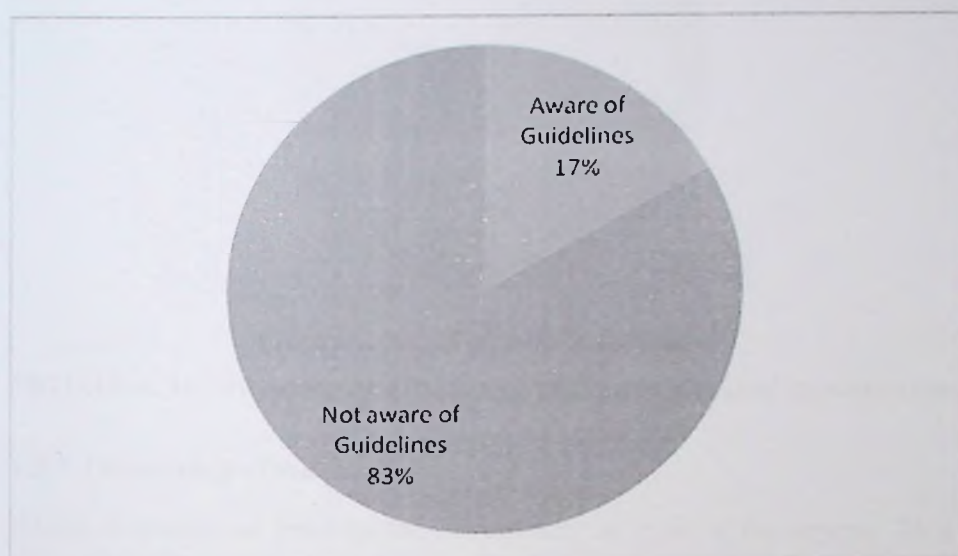


FIGURE 4. 13: Respondents awareness of the guidelines to wetland use

4.3.6 Registered and organized groups of wetland users

Alongside the sensitisation about the policy, local wetland users are supposed to be organized into registered user groups. When wetland users were asked whether they were in groups or not, a greater majority (60%) indicated that they were not in groups at all as shown in Figure 4.15. The number of wetland user groups range from 1-5 groups per wetland per community. These are too few groups to cater for every community member's interest, participation and views about wetland use. In fact some community members like the disabled complained of being left out in the groups. Those who are not in any groups at all far much outnumber those in groups. Within the registered and organized groups, there is a higher possibility for verbal interaction and thus sensitisation about wetlands than for people who operate individually without being in any groups and thus have fewer chances of meeting. The presence of fewer organized and registered

groups also accounts for the low levels of awareness of the wetland policy as depicted in Figure 4.13 .

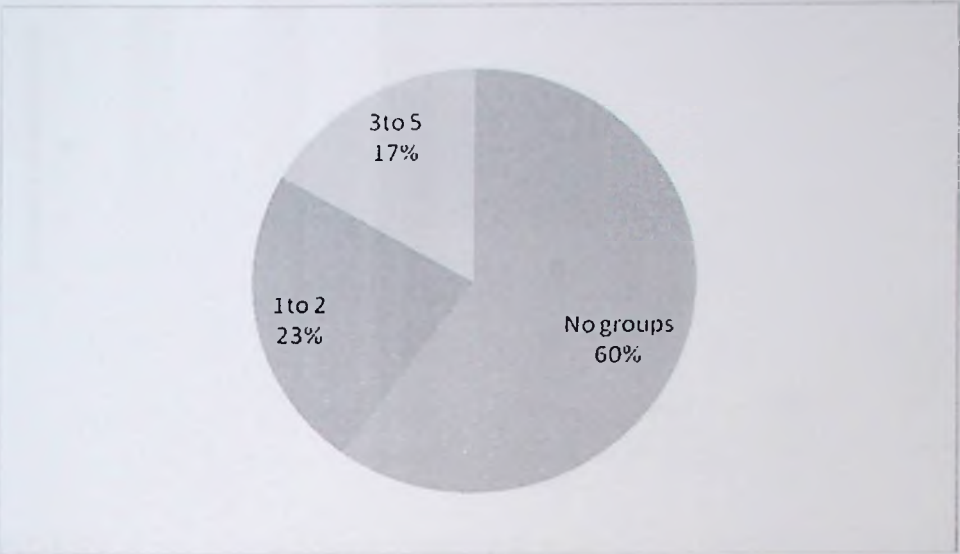


FIGURE 4. 14: Presence or absence of groups in wetland communities

4.3.7 Ownership of wetlands

Ideally wetlands are held by the government in trust of the people. This means that the real owners of the wetlands are the people with government playing a custodians role. Figure 4.16 shows the feelings of the respondents in view of ownership of the wetlands.



FIGURE 4. 15: Respondents views on the nature of wetland ownership

From Fig 4.16 an equal proportion of respondents (30%) think that the wetlands belong to either government or the community alone. This is a total of 60 % who are ignorant of the true ownership of the wetland. Further more 6% of the respondents clearly stated that they are not aware of who owns the wetland. Five percent (5%) of the respondents think the wetland belongs to the Chairman of the community which is out rightly wrong but is a clear indication of the level of ignorance about the wetland ownership and policy as well.

The 25% of the respondents who think that the wetland is owned by both the government and the community is somewhat near the truth of the matter in wetland ownership. However the equal role apportioned by this group would not result in the community owning the wetland to the extent of opposing anyone with government backing who would have liked to misuse the wetland at the expense of the local people, given the upper hand that normally characterizes governments' interventions.

4.4 Illegal activities taking place in wetlands

A number of illegal activities were observed and reported by respondents during the survey. In some cases it was encouraging to find that the number and severity of these illegal activities were small and dwindling while in other situations it was reported that these activities were on the increase. On a general scale, illegal activities had not stopped completely as suggested by 9% of the respondents in Figure 4.17.

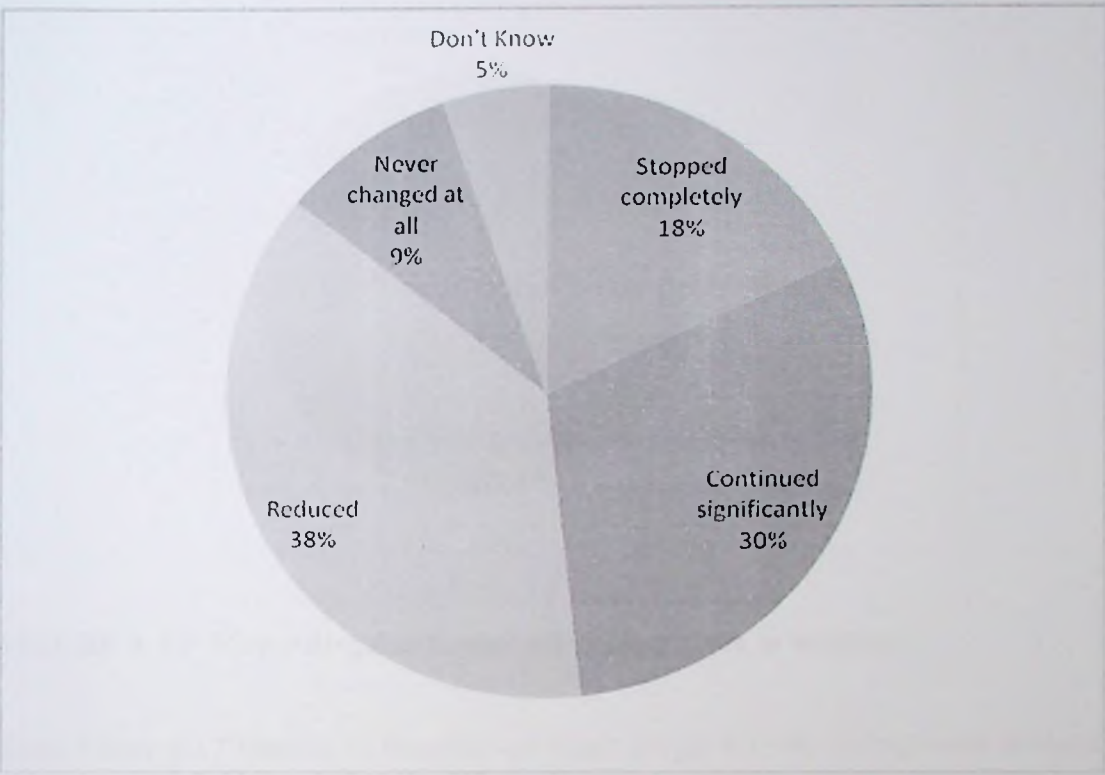


FIGURE 4. 16: Respondents views on the condition of illegal activities

According to Figure 4.17, 38% of the respondents believed that illegal activities had reduced while 30% suggested that illegal activities had continued significantly since the implementation of the wetland policy. Those who suggested that illegal activities had reduced were basing their argument on the fact that there was government intervention in demarcating wetlands into use areas and non-use areas. Government had done this to stop the growing rate at which wetlands were being converted. Apart from this zoning if governments intervention had remained active in these wetlands, then illegal activities would have reduced to the extent of stopping completely. The problem was that after the zoning, governments intervention stopped completely with the result that other forms of illegal activities continued.

Therefore 30 % of the respondents who suggested that illegal activities had continued were very realistic because a good number of these illegal activities could be seen in the nearby wetlands. These illegal activities are sometimes difficult to control given the fact that the majority happen at night time as suggested by 57 % of the respondents in the Figure 4.18

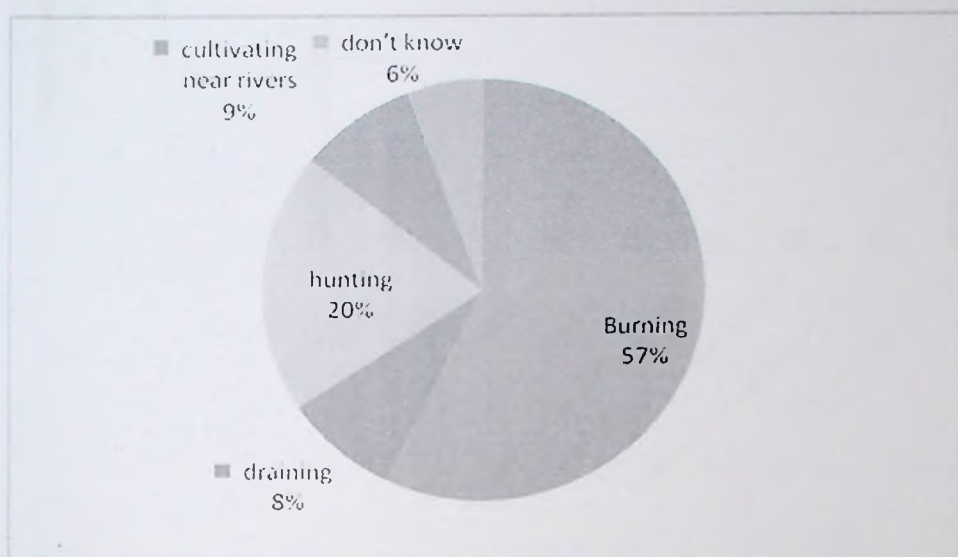


FIGURE 4. 17: Major illegal activities still taking place in wetlands

From Figure 4.17 burning is the most abundant illegal activity facing most wetlands as suggested by 57% of the respondents. The main reasons advanced is because burning is undertaken by desperate people who do it under the cover of the night. This is closely followed by the hunters at 19% since wetlands are the only source of free meat. There is still draining as well as cultivating near rivers which is still done irrespective of whether sensitisations are carried out or not. The main reasons being that governments intervention after the zoning has been very minimal.

4.4.1 Persistence of illegal activities despite the wetland policy

According to the respondents interviewed, illegal activities have persisted because of a number of intertwined factors. These have to do with a higher population and a lack of where to grow crops as can be seen from Figure 4.19

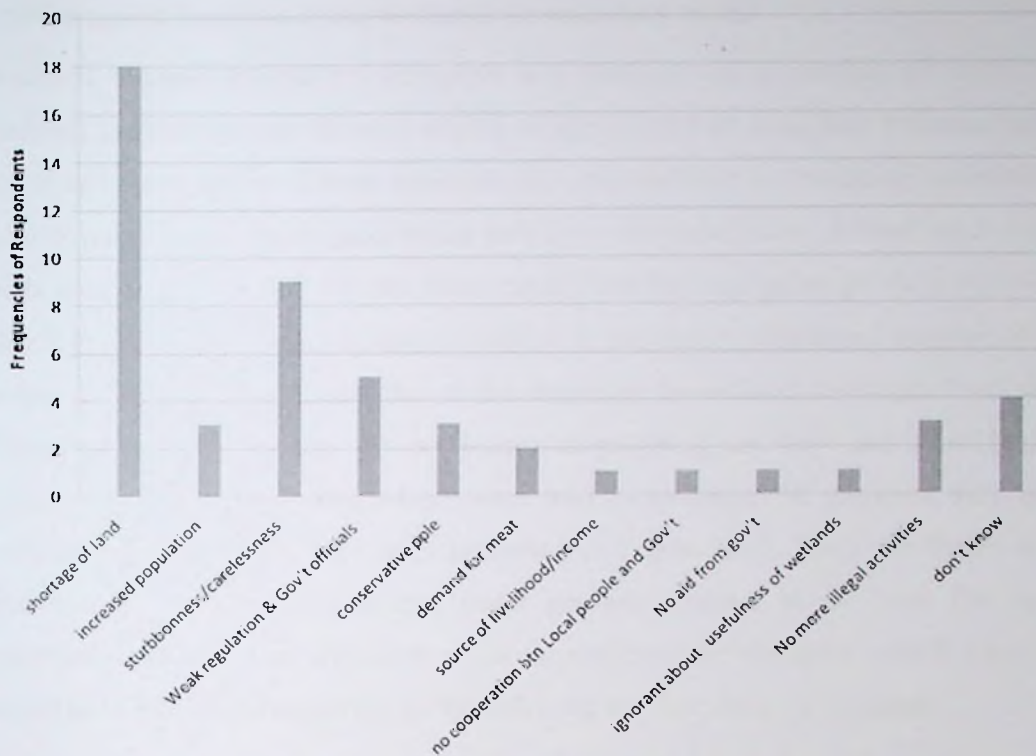


FIGURE 4. 18: Why illegal activities have persisted in wetlands

The biggest reason for the persistence of the illegal activities is the shortage of land (29% of the respondents). This can be clearly seen from the previous sections where this place has a high number of persons per household added on to the fact that the majority of the people rely on wetland based farming. The high population which is also reported in the the background to the respondents of this section lead to desperate people who are stubborn and careless which also take a big percentage (17%) on the persistence of illegal activities. The stubbornness and carelessness is mainly due to over dependence on wetlands and lack of any other alternatives

Other factors presented by the respondents for the persistence of illegal activities are the weak government officials and regulations (10%), and the belief that wetlands are fertile. If the prime reasons of a higher population and weak laws are tackled then, wetlands illegal activities would be a thing of the past.

4.5 Household Incomes from wetlands in monetary terms

Wetlands support people's livelihoods and incomes in a number of ways. Kabale wetlands provide income through selling of agricultural produce like potatoes, cabbages, maize and many others. Kabale wetlands also provide craft and building materials for the local population and fetch good prices locally on the rural scale. A head load of papyrus reeds goes at 2,000-3,000 Ug shs. Mats made from wetland grass go for 3,000-4,000 Ug Shs. Fish production from wetlands in Kabale is not highly monetized because of general decline in the fishing business due to the shrinking in wetland coverage. Even the once vibrant Kitanga fishponds are no longer functioning as they are now bushy and unattended to. However respondents were told to monetize all products they get from wetlands and the results have been presented in Figure 4.20. From the figure it can be seen that 22% of the respondents don't get any income at all from the wetlands. Therefore these have no incentive at all to conserve the wetlands which could be the reason as to why some respondents' attitudes are not favorable to wetlands.

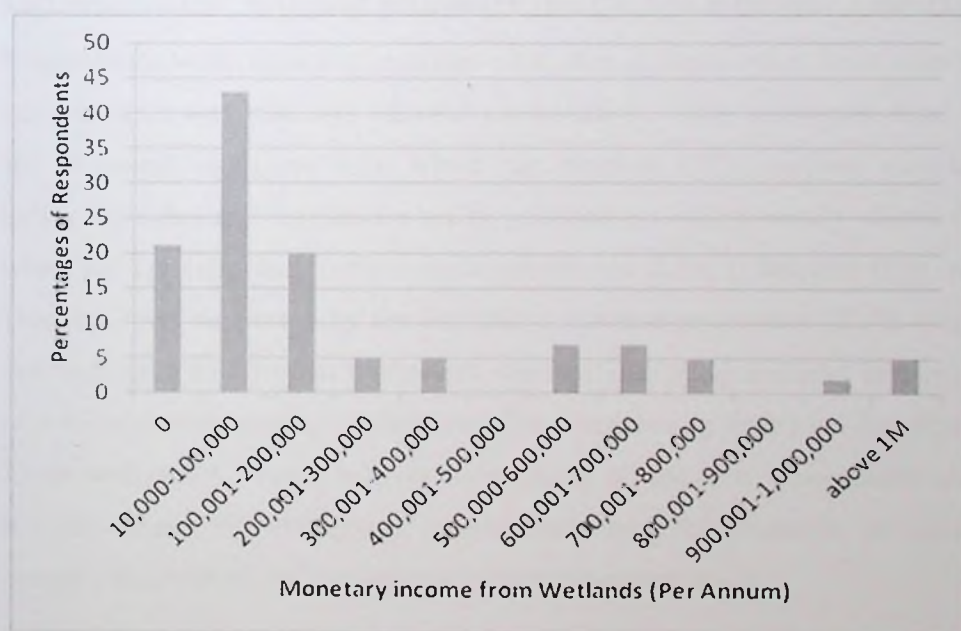


FIGURE 4. 19: Household incomes from wetlands expressed in monetary terms

The majority of the respondents i.e. 43% get between 10,000-100,000 Ug shs per year.

However 20% get between 100,001-200,000 Ug Shs while 12% of the respondents get between 200,001 up to above 1m Ushs. The main reason for this very little income from wetlands is that wetlands are still being lost and hence harvestable products like papyrus are not enough to bring up peoples incomes. There has also been little recovery of the destroyed wetlands in the district thus incomes from wetlands are low up to nill as seen from Figure 4.20. In comparison with Emmerton *et al.*, (1999) where a small section of Nakivubo wetland i.e. 45% of the wetland used for crop farming alone would yield 200 million Ug Shs per year while the rest of the area left intact would generate 180 tones of papyrus per year worth 17.5million Ug Shs per year and 32 million shs per year from brick making while fish farming would bring in 6million shs per year if the users are organized. For this dream to be achieved in Kabale district wetlands some of which are bigger than Nakivubo wetland would need a lot more sensitization and reorganization which can be achieved if the wetland policy is fully implemented. But of now this still remains a dream on paper.

4.6 Communities' roles and responsibilities towards wetlands' conservation

Respondents were tasked to explain what they thought were their responsibilities and roles towards wetlands and wetland conservation. Their responses have been analysed and presented in Figure 4.21, where the majority (32%) believe that they needed to follow the rules and regulations set by government which clearly shows that they know what they are supposed to have done and are not doing it because they need to survive. This is further supported by the fact that a sizeable proportion of the respondents agree that they need to do other businesses not necessarily agricultural and others agree they need to have other coping mechanisms like constructing their own fish ponds so that they do not necessarily have to rely on the wetlands all the time. This clearly shows that there is some degree of willingness to cooperate with the demands of conservation once enough sensitization and government commitment are done.

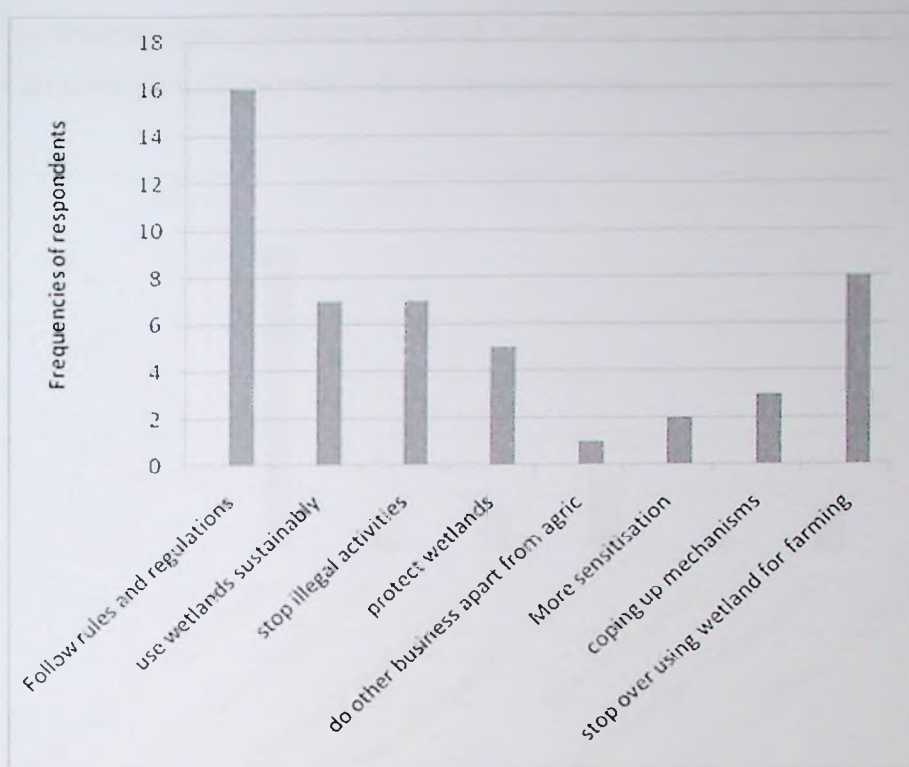


FIGURE 4. 20: Communities' roles and responsibilities towards wetlands and wetlands conservation

4.7 Government's roles and responsibilities towards wetlands conservation

Respondents were tasked to state the role of the government towards wetland conservation. An overwhelming majority (52%) suggested that government needed to strengthen regulations so that it takes charge of illegal activities by doing more deeper sensitization as shown by figure 4.22.

There is a correlation between Fig 4.21 and 4.22 in that the community knows that rules and regulations need to be adhered to once the government strengthens these rules and regulations either through enforcement, budgetary support by employing more staff and other mechanisms.

Respondents were also able to point out the various ways government was supposed to make them less dependent on wetlands for wetland conservation and measures suggested

included sponsoring their children in school as well as getting aid from government which are all some form of payments for ecosystem services.

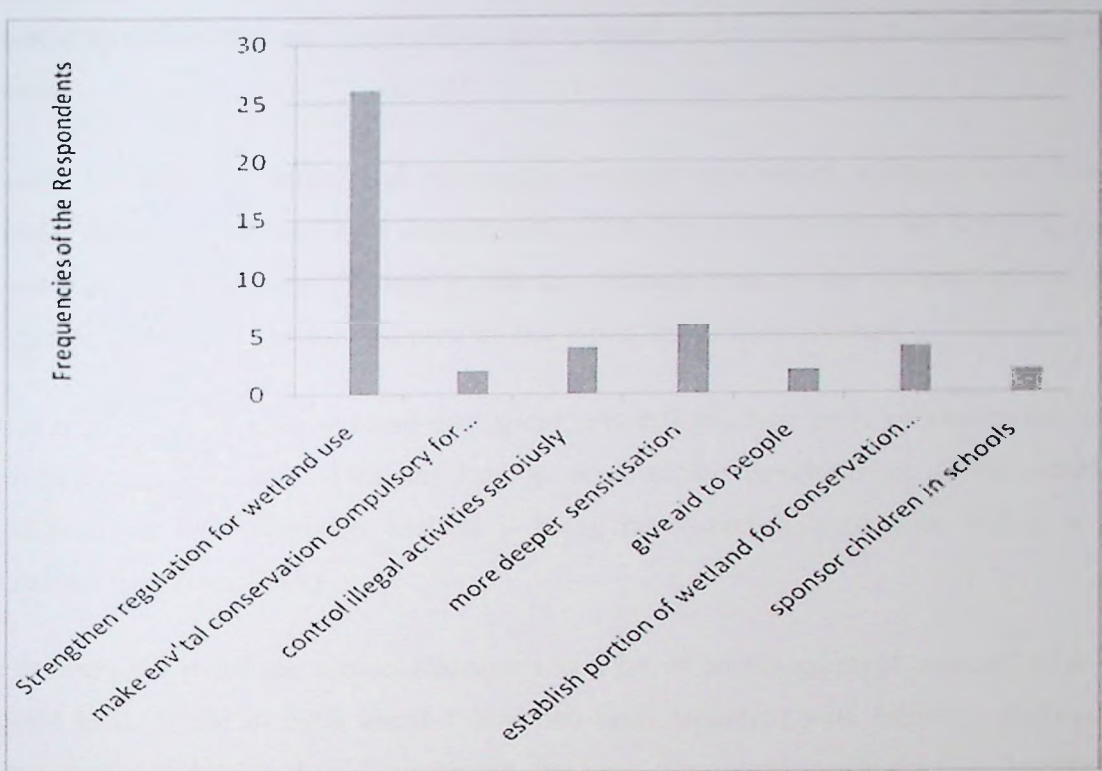


FIGURE 4. 21: Roles and responsibilities of the government towards wetlands

4.8 Wetland management programmes in Kabale district

4.8.1 Nyamuriro wetland conservation Project

The name Nyamuriro is derived from Iyamuriro meaning – *place for rain charming*. This shows how wetlands were always associated with rainfall. This project is implemented by NatureUganda with financial support from the United States Agency for International Development- USAID (through Prime West) in partnership with Kabale district local government. The project started in 2007. During data collection, the research team found out that in line with the wetland policy, the project has done the following

Establishment and empowering wetland management committees, has also undertaken to demarcate and zone Nyamuriro wetland into crop areas and non crop areas establishing 50 ft buffer zone on either side of River Ruhuhuma.

*Nature*Uganda with the local communities have planted papyrus in the buffer area, therefore shielding the river Ruhuhuma from silting and in turn reduce the speed flow, establish water and soil conservation structures on the hill slopes facing the Nyamuriro wetland to reduce the rate of run offs to the wetland, and in consequence mitigating soil erosion.

Nature Uganda also introduced appropriate income generating activities that would replace and solve wetland over dependence. These are fish farming, bee keeping, goat keeping and fruit growing. *Nature*Uganda also planted trees on the severely eroded hill slopes to stop further erosion and provide fire wood and timber in future

As a result of the above wetland ecological restorations, five pairs of cranes are now breeding at the wetland. This has lead to eco tourism development of the wetland including and for Nyamuriro wetland is being developed coupled with listing as an Important Bird Area (IBA)

In the very words of the project manager lies a lot of encouragement and and hope as quoted here. While in 2008 about 1 km² had been replanted with papyrus, the extent reaches over 50 km² to date. Surprisingly, the very community members that descended on the wetland to decimate it in the 1990s are the very communities that are actively involved in replanting it – indicator for behaviour change. Initially lost wetland glory is gradually returning as a result of wetland restoration programmes – hence headloads of papyrus reeds for fuel are ferried from the replanted part of the Nyamuriro wetland. Women who had resorted to using couch grass rhizhomes as cooking fuel can now access the papyrus reeds easily and quickly. Furthermore, water collection points that had gone without water for larger part of 2007 are reportedly gradually filling with water while muddy waters flooding the Nyamuriro wetland are no more as a result of water and soil and water conservation structures erected.



Plate 1. Degradation and restoration of Nyamuriro wetland (a)steep slopes, (b) soil erosion conservation structures, (C&D) wetland restoration.

However one wetland project being implemented by *NatureUganda* alone is only enough for the Nyamuriro wetland and is surely not enough for the entire district wetlands as the above benefits are exclusively being seen in the two neighbouring sub counties of Ikumba and Muko that share Iyamuriro wetland leaving the rest unattended too. On the other hand *NatureUganda* implements another nature conservation programme for Echuya Forest which is also another deserving area and therefore *NatureUganda* deserves commendation.

4.9 The effects of wetland policy implementation in Kabale district

According to the wetland policy, the frequency of harvesting papyrus in one area should not be greater than once in every 15 months, otherwise the rate of growth and the amount which can be harvested will decline. The papyrus harvesting observed in Rwanyena village in Rwanyena parish, Rubaya sub county just next to Lake Bunyonyi, it is unsustainably done to the extent that run off from the upland areas goes direct into the lake without any wetland vegetation to filter it. Because the soils in this area are red, the Community believes that this is a periodic occurrence of the Red Blood of the statue of Holy Mary which was stolen from the nearby Catholic church and dumped into the lake when the thieves were about to be apprehended or caught. This phenomenon is locally termed as the "Biizi Bitukura Case" which literally means "the Red bloody looking water" named so because of the aforesaid incidence. Ideally this water turns red because of the red soils colour that is never filtered through any wetland papyrus and other wetland vegetation that is always unsustainably harvested in the face of the wetland policy which otherwise caters for the sustainable papyrus harvesting. In view of the papyrus harvesting that is so unsustainable to the extent of washing top red soil into the lake the wetland policy has had little or no effect towards papyrus harvesting and regeneration.

In view of the fact that 41% of the total respondents interviewed in this study had unfavourable attitudes and perceptions towards wetlands and wetland conservation in general with the above misconception of the Biizi Bitukura incidence, the wetland policy has had little effect if any towards changing local peoples attitudes and perceptions.

The wetland policy clearly stipulates that on no account should papyrus be burnt, as doing so reduces the amount which can be harvested. Referring to the fact that 57% of the respondents reported that burning of wetlands still takes place especially under the cover of the night, 20% still do hunting while 8% still drain wetlands. The same wetland policy stipulates that there will be no drainage of wetlands unless more important environmental management requirements supercede. Recognizing that the drainage still taking place is on individual basis and unplanned then the wetland policy has had little effect little or no effects towards wetland conservation.

Goal No.2 of the wetland policy states that the government will strive to end existing unsustainable exploitative practices in wetlands to avert the decline in their productivity. Clearly government has not done its work since unsustainable practices like papyrus harvesting still exist in the wetlands. To this effect, the wetland policy has had little effect on the conservation of wetlands.

Wetland policy principle (b) states that wetland conservation can only be achieved through a coordinated and cooperative approach involving all the concerned people and organizations in the country, including the local communities. Government has not yet come out to involve the local communities in which case some of their attitudes and perceptions would change greatly. The local people still think that government is on one side of pushing them away from using the wetland completely. This is the reason why some respondents were first suspicious of the respondent in giving out information. But as the rapport was built later, the respondents become free to give out information and consequently advise on what should be done. Government has not yet fully involved itself in explaining community empowerment towards wetland conservation and hence there is little effect of the wetland policy on wetlands and wetland conservation.

Wetlands policy principle (c) stipulates that it is of vital importance for wetland conservation and management that the present attitudes and perceptions of Ugandans regarding wetlands must be changed. At the moment the local peoples attitudes stand at 41% of the respondents having unfavourable attitudes and perceptions (refer to Fig 4.9 in this chapter). In this regard with the present low level of government involvement in the wetland policy implementation the wetland policy has had little effect on to wetland conservation.

In addition to the above government goals and principles in the wetland policy, government also has put in place a number of key policy strategies by which wetland conservation is supposed to be achieved. For example under conservation of wetlands policy strategy, government is supposed to establish fully protected wetland areas of important biological diversity. Government may also establish certain wetlands which

will be used for partial exploitation such as research and no modification, drainage or other impacts will be entertained for the so-protected wetlands. According to the research findings, wetlands were divided into use areas and no- use areas for the full protection of important biological diversity. The wetland use areas were the areas where people had intervened seriously and non-use area were the areas where people had not entered the wetlands fully because of permanent flooding. Up to this time and even in the near future local people know their limits and where they are supposed to go and use freely and where they are not supposed to go and exploit. Even with the low level of government intervention, local people know their limits and with regard to this demarcation of the wetland, the wetland policy has had significant effect on wetland conservation.

Another key policy strategy government put in the wetland policy is promoting national public awareness campaigns on wetland resources with other resource users at district and national levels. This public awareness is supposed to be disseminated through leaflets, posters, radio and television. The research team found that each household has a radio but there were no radio programmes pertaining to wetland conservation that had been aired out in the last two years. The research team also never found any leaflets or posters with any wetland information. This is indicated by the fact that the awareness levels of the community were low i.e. 42% of the respondents were not aware of the wetland policy (Fig 4.13) and 83% of the respondents were not aware of the guidelines to wetland use (Figure 4.14). Because of this low awareness amongst the community wetland policy has had little effect on wetland conservation.

Another key policy strategy in the wetland policy is wetland legislation in which government is supposed to enact a national law for regulating the management of wetland resources. Presently, there has not been such a law enacted in Uganda. Consequently there are no punitive measures for the law breakers and local people have continued to abuse wetlands through burning (54% reported burning of wetlands and 19% Hunting in Figure 4.18). Therefore wetland policy has not had any significant effect on wetland conservation because of little government involvement including not enacting a national law to regulate management of wetland resources.

CHAPTER FIVE

6.0 Conclusions and Recommendations

6.1 Conclusions.

Basing on the observations of the study and analysis of the study results and findings the following conclusions are very possible.

There is very little wetland coverage for the whole of Kabale district. Only seven subcounties have wetlands and 13 subcounties have no wetlands at all. The communities in the 13 subcounties without any wetlands are have no easy access to wetland products like papyrus and others. These people living in sub counties without any wetlands are at a high risk of losing out completely on wetland services like replenishment of ground water supplies and flood water control and others.

Local peoples' attitudes, perceptions and awareness of the wetland policy about wetlands and wetland conservation is still low and there is a glaring need to have these perceptions and attitudes changed through public awareness campaigns using radio and television plus leaflets and posters. Considering Nanyunja's observation in literature review about local peoples attitudes and perceptions, which might appear high Because of fear government and sometimes the desire to look positive and pleasant (Nanyunja, 2001), the attitudes and perceptions observed here are incredibly low.

There was not enough sensitisation for the awareness, attitudes and peoples perceptions about wetlands to change. Those whose attitudes and perceptions are favourable to wetlands and wetland conservation have not translated into actions that support their beliefs because of lack of sustained sensitisation and lack of alternatives to wetland unsustainable activities.

The zoning of wetlands into use areas and non use areas was a good measure to ensure wetland protection. However due to lack of sustained sensitisation and awareness

creation the community developed negative feelings about governments good intentions with the local communities for wetland use and management.

The level of illegal activities in wetlands has reduced from that high level during the time when wetlands were heavily attacked, but have not reduced to the extent of stopping completely. Because of a lack of a supportive mechanism to peoples' way of life that heavily depended on wetlands, these illegal activities have silently but persistently remained. For instance the biggest illegal activity which is burning is done carefully at night to avoid being spotted and apprehended.

With few exceptions in Muko and Ikumba sub counties where *Nature* Uganda is active, there are no wetland management plans, programmes and institutions to cement, backstop and integrate the conservation and wise use of wetlands into daily peoples livelihoods. The wetland user groups are lacking in a majority of wetlands. These are highly informed community institutions that can be of great help in achieving wetland conservation even in the absence of government intervention once they are appropriately empowered.

The only wetland conservation programme in the whole district is the Nyamuriro wetlands conservation project operating in only Ikumba and Muko sub counties only in the communities near Nyamuriro wetland implemented by the NGO in the names of *Nature*Uganda. There is great need to increase the number of programmes reaching out to wetland adjacent communities.

Nyamuriro wetlands conservation project has had a lot of successes for wetland conservation and improving the livelihoods of the people near wetlands but its achievements are only localized to Nyamuriro wetland alone. Its achievements like Bee keeping projects are nothing on the whole district wide scale for all the wetlands in Kabale district and so this should be replicated in other sub counties of the district.

Apart from the zoning of wetlands into use and non use areas, there has been very little government involvement in wetland policy implementation. This resulted into a number

of goals, policy strategies and key principles not being implemented. This resulted in little effect of the policy on wetland conservation.

There was little implementation of the wetland policy aspirations like wetland restoration to increase the amount of harvestable resources from wetlands like papyrus. This led to the low household incomes from wetlands.

6.2 Recommendations

Wetlands still have the relevant potential and play a crucial part in wetland adjacent communities in their day to day lives. This is clearly seen from the fact that the once dilapidated Nyamuliro wetland after a few years of restoration from an NGO in the names of *NatureUganda*. Therefore every effort of wetland recovery is worth the money spent and this what needs to take place in the whole district especially in the subcounties with no wetlands at all.

Some wetlands like the Kaniabaha wetland that provide water which helps produce HEP for Kisiizi Hospital and neighbouring areas should be targeted for Ramsar designation to accord them the protection that goes with Ramsar listing of wetlands. Wetland restoration should be immediately embarked on by the different stakeholders beginning with the sub counties where there are no pronounced wetlands

All the different wetland stakeholders in the district should get together and design different projects for the different wetlands that are so far still surviving to engage the local communities in a number of activities to divert their only attention to wetlands.

Local communities surrounding wetlands should be targeted as beneficiaries in a number of government programmes NGO's and other development partners so that they get empowered to divert their attention from the few remaining wetlands.

There should be continuous wetlands sensitization both the active and passive one. The active one which involves sensitization meetings with the local people could be

scheduled periodically as the passive one on radios in form of songs and plays can be instituted on the various radio stations in the region.

Government should be involved directly in implementing the wetland policy goals, aims, strategies and principles especially enacting a law to guide wetland management and enforcement of this law to achieve maximum benefits for the local community.

Sensitisation about wetlands is supposed to be ongoing in order to be realise social and behavioural change about wetlands attitudes, perceptions and awareness for wetland conservation. This can be achieved through the national public awareness campaingns on radio and Television plus posters and leaflets.

When local people are targetd as beneficiaries in government programmes, wetland restoration will be possible after which local peoples income base will be widened through a variety of wetland products like fish and papyrus.

A more detailed study should be undertaken covering the whole district to identify which wetlands should be restored and when with the involvement of all the stakeholders in the district.

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Appendices

Appendix 1: Questionnaire:

BACKGROUND INFORMATION

Parish.....Village.....
 Nearest wetland.....wetland type.....
 Distance to the wetland.....Age.....
 Number of people in the Household.....Sex.....
 Source of income/Livelihood.....
 Average income per year.....
 Amount of land available to the household.....
 Is this land enough or not enough for the Household? Yes/No
 If No, then how do you get enough land for family food security and income?

WETLAND USAGE AND ILLEGAL ACTIVITIES

1. How do you use the wetland presently?

☐ Fishing ☐ Hunting ☐ Agriculture ☐ Brick making
☐ Collect water any other, please specify

2. How often do you use the wetland presently?

3. What do you presently get from the wetland?

4. What were you getting from the wetlands at least 20 years ago in the 1980's?

5. How do you compare the present and the past ability of the wetland in providing you with the benefits you enumerated above?

6. If there is/are any difference(s) what do you think are the reasons for the difference.

7. Below is a set of activities that take place within wetlands. please indicate the number or proportion of people engaged in these activities as follows in your village:

Name of Activity	No. of participants at village level	Origin beneficiaries (km)	Whether or not respondent is part
Draining			
Burning			

Ridging			
Binding			
Fencing			
Papyrus harvesting			
Fishing with Gillnets less than 2 inches (Stretch dimension)			
Size of fish ponds exceeding 1000m ²			
Encroachment			
Fishing with spears & traps			
Cattle grazing (How many Animals per unit are of wetland and for how long?)			

8. Do you know of any activities that are not permitted in wetlands?
9. If yes, which activities are they?
10. Why do you think these activities are regulated/not permitted?
11. Would you say that you like wetlands? Please explain:
12. Would you say you support wetland conservation? Explain why:
13. Do you support conversion of wetlands for agriculture?
14. Would you love to have wetlands in future?
15. In your view, what should:
 - i) The government does to ensure that wetlands exist in perpetuity?

Daily Monitor			
Orumuri			

26. Could you please elaborate on the applicability and relevance of the messages above to wetland conservation?
27. How many functioning wetland community user groups do you know in this village?
28. How many members are in each wetland user group in this village?
29. According to you, how many members of this village ARE NOT in the wetland user groups and why?
30. Have you heard of the campaign by the government stressing the use and importance of wetlands? Yes/No
31. If yes,
 - i. For how long did it go on continuously?
 - ii. How often has it been conducted?
32. Have you heard, Seen and or used the National policy of the conservation and management of wetland resources of 1995?
33. What is the 1995 wetland policy all about?
34. In your view, why have we had wetland degradation when there is the above policy about wetland conservation?
35. What is your advice to the Government, NEMA or WID about the 1995 wetland policy in order to achieve sustainable people-centered wetland conservation?

ATTITUDES AND PERCEPTIONS OF WETLANDS AND WETLAND CONSERVATION

36. Read the following carefully and indicate whether you agree with each of the statements by answering True (T), False (F) or don't know (D), giving reasons for your answers.
 - i) Wetlands play an important role in regulating rainfall,
 - ii) Wetlands play an important role in controlling floods
 - iii) Wetlands play an important role in waste water treatment,
 - iv) Wetlands improve the beauty of a natural environment
 - v) Wetlands are only important to us when we get local products from them

- vi) Wetlands take up land space for urban and industrial development
- vii) Wetlands by themselves alone are of low economic use and value
- viii) Wetlands encroach on peoples' land
- ix) Wetlands hinder travel and communication
- x) Wetlands are dangerous places as they harbour snakes other dangerous animals
- xi) Wetlands are unhealthy places through mosquitoes (malaria), leeches, Bilharzia, Cholera and bad smell.
- xii) Wetland conservation is an important goal for society.
- xiii) Wetlands are protected for our own future benefit.
- xiv) It is important to conserve wetlands for the survival of various plants and animals,
- xv) It would be good if some land in wetlands is given to landless people,
- xvi) Although wetlands are important, it is better to distribute them among people
- xvii) Although we need some land for agriculture it is necessary to set aside some wetland for biodiversity conservation.
- xviii) Wetlands have a right to survive independent of any benefit or harm to the people.

37. Are there any particular features of the wetland e.g. Medical plants, cultural places, special animals you value or are the wetland in its totality important to you?

1.	I value particular feature of the wetland
2.	I value the wetland in totality

38. For particular features of the wetland valued, kindly list them:

- i.
- ii.
- iii.
- iv.

39. Considering the values you enumerated above, would you be interested in conservation of wetlands Yes/No.

40. If No, does your willingness to support wetland conservation mean that wetlands in totality have value to you?

41. Is there anything you are willing to accept from NEMA or WID to motivate you to conserve wetlands?

42. If Yes, Explain.....

43. Please indicate whether or not you are willing to support each of the following wetland conservation activities.

i)	Leaving wetlands to regenerate
ii)	Educating others on the importance of wetlands
iii)	Support closure of activities that degrade wetlands
iv)	Membership of a wetland management/user committee

44. How much would you be willing to contribute to the efficient functioning of wetlands?

45. Answer True (T), False (F) or Don't know for each of the following;

- i) Protecting wetlands is not worth any amount to me
- ii) Money contributed will be misappropriated
- iii) It is the duty of Government to pay for wetland conservation
- iv) Enough has already been done towards wetland conservation.

46. Are you convinced that if the ongoing wetland degradation continues unchecked one day wetlands will not exist?

47. Would you feel the loss?

48. What specific recommendations to government you would like to make towards wetland conservation?

WETLAND MANAGEMENT PROGRAMMES

49. What programmes have the rural people living near wetlands been participating in up to today?

50. For each programme, give the year it started, lifespan of the project, budget ceiling, number of people reached and main activities promoted.

Sub-county	Wetland targeted	Name of project	Life span	No. Beneficiaries reached		Main activities	Total Budget
				Males	Females		
Bukinda							
Kamwezi							
Rwamucucu							
Kashambya							

Kamuganguzi							
Bubare							
Muko							
Kaharo							
Maziba							
Ikumba							
Butanda							
Bufundi							
Buhara							
Kyanamira							
Kitumba							
Kabale Municipality (Southern Division)							
Kabale Municipality (Northern Division)							
Hamurwa							
Ruhija							
Rubaya							

51. To what extent have the above projects contributed to peoples' livelihoods?
52. What have been the biggest achievements of the above programs with respect to;
 - i) Wetland conservation?
 - ii) Promoting awareness of the wetland policy?
53. What has been the biggest challenges faced with the above projects in reaching people living near wetlands?
54. In your own Views, what do you advise the government to do so as to achieve maximum wetland conservation.

Appendix 2. Medicinal uses of wetland plants in Uganda.

TAXON	LOCAL NAME	DISEASE	PART USED
ACANTHACEAE			
<i>Brillantaisia mahonii</i>	Kiremberembe (G)	Psychotic excitement	Leaves
<i>Hygrophia auriculata</i>	Musoke (G)	Palpitations	Leaves
<i>Scandoxus multiflorus</i> <i>Justicia angleriana</i>	Kinyataba (T)	Abdominal pains	Leaves
AMARYLIDACEAE			
<i>Scandoxus multiflorus</i>	Mayuni-gawanja (G)	Leishmaniasis	Root
ANARCADIACEAE			
<i>Rhus vulgaris</i>	Omukanja (A)	Rabies	Roots
ARACEAE			
<i>Pistia stratiotes</i>	Abongo dar(l)	COUGH	Whole plant
ASTERACEAE			
<i>Aspilia pluriseta</i>	Makai (Jap)	Malaria	Roots
<i>Malanthera scandens</i>	Ekarwe (A,K)	malaria	Leaves
CELESTRACEAE			
<i>Maytenus buchananii</i>	Nalingwalimu(G)	Headaches	Leaves
ZINGEBERACEAE			
<i>Costus afer</i>	Kitungulu(G)	Helminthiasis	Roots
CUCURBITACEAE			
<i>Momordica foetida</i>	Bombo (L,T)	Measles	Leaves
<i>Mukia maderaspatensis</i>	Bukabuka	Infertility	Roots
CYPERACEAE			
<i>Cyperus digitatus</i>	Akasaana (G)	Cough	Leaves
<i>Cyperus distaus</i>	Katabuteme (G)	Restroternal	Leaves
<i>Cyperus papyrus</i>	Kitoogo	Oedema	Leaves

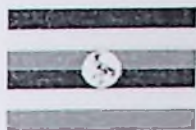
<i>Marscus squarrosus</i>	Omaara (L.)	Male impotence	whole
FLAGELIARIACEAE			
<i>Flagellaria guineensis</i>		Chest pain	leaves
GUTTIFEREA			
<i>Symphonia globullifera</i>	Omusaali(G)	Cough children	in Roots /stem
HYDROCHARITACEAE			
<i>Ottelia ulvifolia</i>	Kizimo cha(Jap.L)	Stomach troubles	Leaves
LEGUMINOSAE			
<i>Alysicarpus rugosus</i>	Abebe acel(L)	Functional psychosis	Whole
<i>Cassia didymobotrya</i>	Omugabagaba (A)	Tapeworm	Leaves
<i>Macuna pruriens</i>	Dukaekibabu (G)	Nervousness	Leaves
<i>Sesbania sesban</i>	Omunyeganyenje (A)	Gonorrhea	Roots
MORACEAE			
<i>Ficus thonningii</i>	Ananga(L)	Influenza	Back
<i>Myricacea</i> o			
<i>Myrica kandtiana</i>	Bowolaba (L)	Asthenia malase	Leaf
NYMPHAEACEAE			
<i>Nymphaea capensis</i>	Kiryerya (G)	Heart palpitations	Roots
OXALIDACEAE			
<i>Biophytum sensitivum</i>	Nyarwehumbaraka(A, N)	Diabetis mellitus	Leaves
PALMAE			
<i>Phoenix reclinata</i>	Omukindu(A)	Impotence	Leaves
PASSIFLORACEAE			
<i>Adenia rumicifolia</i>	Lubowa(G)	Neurotic illness	Whole

POLYGONACEAE			
<i>Polygonum pulcheria</i>	Omwoganyanja (T,N)	Tropical ulcer	Root
<i>Polygonum salicifolium</i>	Obugoragonja(A,K)	Sore throat	Whole
<i>Polygonum setulosum</i>	Ebyoganyanja(A)	Abdominal pain	Leaves
<i>Rumex hequaertii</i>	Sirangambi(G)	Gastric ulceration	Roots
PRIMULACEAE			
<i>Lysimakhia ruhmeriana</i>	Omuuvuvura (T)	Burns	Fruits
RANUNCULACEAE			
<i>Ranunculus multifidus</i>	Ekireereetu(G)	Emetic	Root
RUBIACEAE			
<i>Pentus longiflora</i>	Ishagara (A)	Fever	Leaves
TACCACEAE			
<i>Tacca leonetopeloides</i>	Acokilete (T)	Headache	Tuber
UMBELIFERAE			
<i>Centella asiatica</i>	Ntamunene (G)	Peptic ulcer	Whole
<i>Oenanthe pulustris</i>	Kakwerewe (L)	Fever	Leaves
URTUCACEAE			
<i>Obetia pinnatifida</i>	Kyolanga (L)	Cough	Leaves
VERBERNACEAE			
<i>Clerodendrum myricoides</i>	Omukuzanyana (A, N)	Knee	Roots
ZINGIBERACEAE			
<i>Aframomum sanguinum</i>	Kitungulu (G)	Intestinal worm infection	Shoots, seeds

Adapted from MoNR (1999)

Appendix 3: The National policy for the conservation and management of wetland resources (1995)

The Republic of Uganda



National Policy for the Conservation and Management of Wetland Resources

Ministry of Natural Resources

1995

CONTENTS

FOREWORD

EXECUTIVE SUMMARY

OVERVIEW

1.0 FUNCTIONS AND USES OF WETLANDS

1.1 ECOLOGICAL FUNCTIONS

1.2. SOCIO-ECONOMIC FUNCTIONS

2.0 WETLAND RESOURCE PROBLEMS

3.0 GOVERNMENT RESPONSE

4.0 AIM

5.0 GOALS

6.0 KEY PRINCIPLES

7.0 SPECIFIC POLICY STRATEGIES

7.1 Drainage of Wetlands

7.2 Environmentally sound management

7.3 Sustainable use of Wetlands

7.4 Conservation of Wetlands

7.5 Water supply and effluent treatment

- 7.6 Tenure and use
 - 7.7 Recovery of previously drained wetlands
 - 7.8 Environmental Impact Assessment (EIA) and Monitoring
 - 7.9 Developing public awareness
 - 7.10 Research and Inventory
 - 7.11 Capacity Building
 - 7.12 Promoting International actions
 - 7.13 Wetlands legislation and Institutional arrangements
- Annex 1: GUIDELINES FOR WETLAND RESOURCE DEVELOPERS

FOREWORD

Wetlands, commonly known as swamps in Uganda, are a resource of considerable importance, just like forests, rangelands, arable land, and open water resources.

Wetland resources in Uganda have traditionally been utilized by the people as a source of materials for construction, crafts, furniture, and as hunting and fishing areas. Traditionally seasonal wetlands and margins of permanent wetlands have been used for grazing cattle, growing crops and as a source for domestic water. In addition, they are a major habitat for wildlife resources. Despite these values, wetlands have hitherto been regarded as "wastelands" and many have been reclaimed and degraded.

When the National Resistance Movement Government came to power in 1986, it inherited a chaotic situation in the social, economic, political as well as in environmental spheres, including wetlands. However, within eight months after taking power, the Government took decisive steps to halt the destruction of wetlands. In September 1986, Government issued administrative guidelines to curtail the devastation of wetland resources. In particular, a ban on large-scale drainage schemes was imposed until such time that a more elaborate, scientifically proven and socially harmonious policy was put

in place. The purpose of this was to provide the basis for environmentally sound management and rational utilisation of the wetlands resources.

Over the last few years, the Ministry of Natural Resources, in consultation with all stakeholders has prepared a National Policy for the Conservation and Management of Wetland Resources. The policy has now been approved by government. It is, therefore very gratifying that I present to you the National Policy for the Conservation and Management of Wetland Resources.

The policy aims at curtailing the rampant loss of wetland resources and ensuring that benefits from wetlands are sustainable and equitably distributed to all people of Uganda. In this respect, therefore, the wetlands policy calls for:

- i. no drainage of wetlands unless more important environmental management requirements supersede
- ii. sustainable use to ensure that benefits of wetlands are maintained for the foreseeable future;
- iii. environmentally sound management of wetlands to ensure that other aspects of the environment are not adversely affected;
- iv. equitable distribution of wetland benefits;
- v. the application of environmental impact assessment procedures on all activities to be carried out in a wetland to ensure that wetland development is well planned and managed.

In order to put the policy goals and objectives into practice and to provide a legal framework for implementing the policy, wetland related issues have been adequately incorporated into the National Environmental Statute 1995. The Wetlands policy will be strengthened by a supplementary law specifically addressing wetland concerns.

The government of Uganda would like to extend her sincere thanks and appreciation to the Norwegian Agency for Development Cooperation (NORAD), the Government of the Netherlands and IUCN-the World Conservation Union for their financial and technical support which has facilitated the formulation of the wetlands policy. The government is

further grateful to all the people of Uganda for their cooperation and participation in formulation of the policy.

With the Wetlands Policy now in place, Government wishes to assure all people of Uganda of her continued commitment to sustenance of wetlands for the present and future generations.

The onus is now on us to ensure that we conserve the wetland resources in the best way possible.

Henry Muganwa Kajura

Minister of Natural Resources

EXECUTIVE SUMMARY

Wetlands cover about 10% of Uganda's total land surface area and provide a wide variety of bio-physical and socio-economic functions. However, these benefits are in jeopardy due to poor management practices. The importance of wetlands to national development and the threats to their continued existence were recognised in 1986, when the government banned further large scale drainage and instituted the National Wetlands Conservation and Management Programme within the Department of Environment Protection to analyse existing activities and assess the full range of functions and values provided by wetlands. In addition, the programme concurrently carried out a sensitisation and awareness campaign and consultations to enlighten the public on the values and functions of wetlands and the need for their conservation and sustainable use.

Government has adopted the National Policy for the Conservation and Management of Wetland Resources to promote their conservation in order to sustain their values for the present and future well being of the people

In support of this aim, the National Wetlands Policy sets five goals:

- i. to establish the principles by which wetland resources can be optimally used now and in the future;
- ii. to end practices which reduce wetland productivity;
- iii. to maintain the biological diversity of natural or semi-natural wetlands;
- iv. to maintain wetland functions and values;
- v. to integrate wetland concerns into the planning and decision making of other sectors.

Three principles apply in pursuit of these goals

(a) Wetland resources form an integral part of the environment and their management must be pursued in the context of an interaction between conservation and the national development strategies and activities.

(b) Wetland conservation can only be achieved through a coordinated and cooperative approach involving all the concerned people and organisations in the country including the local communities.

(c) It is of vital importance for wetland conservation and management that the present attitudes and perceptions of Ugandans regarding wetlands be changed.

Thirty six specific policy statements are made on how the goals will be achieved, and a preliminary set of guidelines for wetland resource users is annexed.

In particular, the policy aims at:

- i. ensuring no drainage occurs unless more important environment management requirements supersede;
- ii. ensuring that only non-destructive uses are carried out in and around wetlands;
- iii. ensuring that wetland developments are subject to environmental impact assessment and audit;
- iv. maintaining an optimum diversity of uses and users and consideration for other stakeholders when using a wetland.

The need for enacting a national law to regulate the management of wetlands resources is highlighted.

Finally, the role of the district authorities in controlling activities within wetlands is defined and procedures to be followed in dealing with applications from prospective wetland resource developers are outlined.

OVERVIEW

Wetlands, commonly known as swamps in Uganda, are a natural resource of considerable importance like forests, rangelands, arable land and fisheries.

The term "Wetlands" refers to an area where plants and animals have become adapted to temporary or permanent flooding by saline, brackish or fresh water.

For our purposes these include permanently flooded areas with sedge or grass swamp, swamp forest or high altitude mountain bog, as well as seasonal flood plains and depressions without flow ('Mbuga' or Dambos).

All wetlands are characterised by impeded drainage, but vary in detail depending on the period of flooding, depth of water, altitude, fertility of the surrounding soil and other environmental factors. They are nevertheless all characterized by having distinctive plants and animals which are adapted to flooding.

Uganda's rich endowment in wetlands, which accounts for about 10% of the land area, is mainly due to her geological past. Many wetlands originated with the upwarping of land associated with the formation of the Rift Valley. The warping was spread over a wide area impending and even reversing river flow.

The wide distribution of wetlands means a large proportion of the population have access to the utilization of wetlands, resulting in extensive degradation of the wetlands. This calls for particular urgency in their efficient management and sustainable utilization.

Wetland resources in Uganda have traditionally been used by the people as a source of building materials, for crafts, furniture and as hunting and fishing areas. Seasonal wetland margins have been used for grazing cattle, growing arable crops, and for domestic water. Wetlands provide important habitat for wildlife.

The high productivity and economic potential of wetlands in Uganda has barely been tapped and experience so far shows it will not be easy. Many attempts at conversion to farmland have failed because fertility was dependant upon an inflow of organic matter and sediment or on retaining a high water table.

1.0 FUNCTIONS AND USES OF WETLANDS

The functional aspects of wetlands can be divided into those which are 'natural' i.e., those which would exist even with no human manipulation (referred to herein as ecological), and those which are created by human exploitation (referred to herein as socio-economic). These functions are itemised below and are not in order of importance because this varies depending on location and many of the functions are inter-related.

1.1 ECOLOGICAL FUNCTIONS

(i) Maintenance of the water table

The impeded drainage allows the water to stay in one place long enough to maximize infiltration. This helps to recharge the water table. A high water table means that in the immediate surroundings of the wetland there is access to water supplies for plants.

(ii) Prevention of erosion

If it were not for the retarded flow of water, the region downstream of the wetland would receive the full erosive force of storm events, resulting in soil and stream bank degradation.

(iii) Reduction in extremes of flow

Wetlands act like leaky dams, ponding back water when they receive it and subsequently letting it flow through slowly. This results in maximizing the area of land which can be kept moist for productive purposes, as well as the lengths of time during the year for such activities.

(iv) Sediment traps

Material eroded from the surrounding catchment by rivers is sedimented out when the flow is slowed upon entering a wetland. Sediment retention prevents downstream resources of dams, farmland, rivers and lakes from being silted up.

(v) Wildlife habitats and centers of biological diversity

Wetlands provide habitat for a variety of plants and animals, some of which depend entirely on wetlands for their survival. They are natural habitats for the Sitatunga and the Shoe Bill, among other species. The Crowned Crane, Uganda's national bird breeds in wetlands with a preference for seasonal grass swamps.

1.2 SOCIO-ECONOMIC FUNCTIONS

(i) Plant products

Papyrus and similar plants have been traditionally harvested for everyday necessities such as thatching, mats, baskets while the palms and smaller-sized trees are used as structural building materials

(ii) Fishing

Wetlands harbor a substantial population of fish, which have traditionally been caught as an important food item in many parts of Uganda which are far away from the main lake fisheries.

(iii) Cattle grazing

The marginal parts of wetlands, where the soil is permanently or seasonally moist, have for long been used as grazing areas for livestock especially during the dry season.

(iv) Water supply

Wetland plants have the capacity to take out impurities from the water thus filtering it. Because of this function, it has been possible for rural communities to obtain a pure water supply at no cost.

(v) Nutrient and Toxin retention

Because wetland vegetation will strip out nutrients from the in-flowing water, this protects the quality of water down stream. They also have the ability to strip toxic substances from in-flowing water.

(vi) Tourism

The diversity of wetland biological communities have a potential for earning tourism income.

2.0 WETLAND RESOURCE PROBLEMS

These problems derive from two sources. Firstly, there has been a traditional lack of recognition of wetlands as anything but unusable wastelands. In previous times when there was enough and easily cultivatable land, the extra work required to exploit waterlogged areas was too great to bother with. This has led to the second general problem, that the exploitation has often been unbalanced, excessive, and inappropriate for the resources. The results have frequently been an irretrievable loss of an important source for sustainable production.

It is important to appreciate that the problems do not arise because of development as such, but because of development which does not take all the requirements of a community into consideration.

The following are among others, the specific problems

(i) Water loss

Wetlands have commonly been drained to enlarge the area of farmland. But drainage of wetlands causes loss of valuable water which would otherwise be available for plant growth.

(ii) Reduced runoff control

If drained, the ability of wetlands to control water flow is lost, as is also the downstream erosion prevention, as well as the seasonal spread of the moist areas for fast-maturing crops and for grazing

(iii) Soil deterioration

Exposure of wetland soils to drying can frequently lead to their acidification, caused by the conversion of sulphide in the original wetland to sulphuric acid. The soil can shrink upon drying and become too thin and friable for good agriculture.

(iv) Traditional use loss

Traditional harvesting of natural vegetation or fishing and hunting as well as a good water supply will be lost if wetlands are completely converted to large-scale exploitation, such as cash crop farming which is a mono-culture activity.

(v) Restricted ownership of the resource

Although conversion to cash agriculture may yield a great amount in the short term, such production tends to be restricted to one or few investors, while reducing or eliminating the various type of production which previously went to many individuals in the community.

(vi) Reduced economic flexibility

Reducing the diversity of productive activity limits the options for adjusting to new economic conditions when they occur later on.

(vii) Crop pest risks

Large areas of monoculture, such as rice growing, are always susceptible to pest invasions. While this in principle might be dealt with by agricultural control methods, these can be expensive and difficult to manage, and beyond the capacity of the wetland developer.

(viii) Health problems

When people come into increased contact with static and unpurified water, as in rice-growing or many other farming practices, an increase in the incidence of bilharzia infections can be expected. This would have a grossly debilitating effect on the community using the wetland calling for unnecessarily heavy investment in health facilities that would have otherwise been avoided.

3.0 GOVERNMENT RESPONSE

Although wetlands conservation and management is a shared responsibility for all Ugandans, Government has a leading role to play. The various functions and related problems of wetlands enumerated above are critical for their sustainable use and the general socio-economic development of the nation.

It is also an international responsibility of government to conserve wetlands and sustainably utilize them under the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat, of which Uganda is a signatory and Contracting Party.

To carry out these shared responsibilities with respect to the country's wetlands, Government has outlined broad aims which are also supported by a number of specific goals. Further, guiding principles will be presented to govern the manner in which the National Policy for the conservation and management of wetland resources will be implemented.

The National Policy on the Conservation and Management of the Wetland Resources complements the goals and objectives of the National Environment Action Plan (NEAP) process and sectorial policies including those of fisheries, forestry, wildlife, water, land tenure and soils, among others, as well as the Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat.

4.0 AIM

The overall aim is to promote the conservation of Uganda's wetlands in order to sustain their ecological and socio-economic functions for the present and future well being of the people.

5.0 GOALS

In support of the above aim, government will strive to achieve the following goals.

- (1) Establish the principles by which wetland resources can be optimally used, and their productivity can be maintained into the future.
- (2) End existing unsustainable exploitative practices in wetlands to avert the decline in their productivity.
- (3) Maintain a biological diversity in wetlands either in the natural community of plants and animals or in the multiplicity of agricultural activity.
- (4) Maintain the functions and values derived from wetland resources throughout Uganda.
- (5) Promote the recognition and integration of wetland functions in resource management and economic development decision making with regard to sector policies and programs such as forestry, agriculture, fisheries, wildlife and sound environmental management.

6.0 KEY PRINCIPLES

The National Wetland Conservation and Management Policy, in pursuance of the above goals, will be based on the following principles:

- (a) Wetland resources form an integral part of the environment and their conservation must be pursued in the context of an interaction between conservation and the overall development strategies and activities.
- (b) Wetland conservation can only be achieved through a co-ordinated and co-operative approach involving all the concerned people and organisations in the country, including the local communities.
- (c) It is of vital importance for wetland conservation and management that the present attitudes and perceptions of Ugandans regarding wetland be changed.

These basic policy principles will be brought to bear through the strategies described herein below.

7.0 SPECIFIC POLICY STRATEGIES

All the strategies herein are deemed to be of critical importance for the success of this policy and are therefore not taken in order of priority.

7.1 Drainage of Wetlands

Uganda has experienced massive drainage of wetlands for human development activities. The effects of this drainage are visible in many parts of the country.

Strategy

- i) There will be no drainage of wetlands unless more important environmental management requirements supersede.

Explanation: Artificial large-scale removal or exclusion of water from a wetland by whatever means constitutes drainage. This may be by pumping, by excavation of water channels and perhaps combined with excessive growing of trees. Other drainage means may include building of dams upstream of a wetland. Such modifications should be avoided.

7.2 Environmentally sound management

Wetlands, other natural resources and the environment are inter-related. Most users of wetland resources do not take into account other aspects of the environment, leading to adverse effects on the environment.

Strategy

(i) Only those uses that have been proved to be non-destructive to wetlands and their surroundings will be allowed and/or encouraged. These include water supply, fisheries, wetland edge gardens and grazing.

Explanation: A key issue in the management of a natural resource is whether its use causes adverse effects on the environment. For example, the production of bricks from clay soil leads to deforestation around the brick-making kilns, which is environmentally degrading. However, the smoking of fish caught in a wetland, using papyrus (which could be sustainably harvested) for fuel may be environmentally sound and can reduce the exploitation of fuel wood supplies in the area.

7.3 Sustainable use of Wetlands

National economic and social prosperity depends on the maintenance of a high quality environment. There is therefore need to balance development with conservation of the environment.

Strategies

(i) Wetlands may be utilized in such a way that they do not lose traditional benefits presently obtained from them.

(ii) Any decision to use wetlands must consider the requirements of all other users in the community.

Explanation: Sustainable use of a wetland is defined to mean utilization which ensures that the products or services derived from that use are available at the same level for the foreseeable future. For example, yields from fishing or harvesting of papyrus should be set at a level that can be maintained for the foreseeable future.

7.4 Conservation of Wetlands

Wetlands are important habitats for a variety of biological resources, some of which depend entirely on wetlands for their survival

Strategies

(i) Government will establish fully "Protected Wetlands Areas" of important biological diversity.

(ii) Government may also establish certain wetlands which will be used for partial exploitation such as research.

(iii) No modification, drainage or other impacts will be entertained for the so-protected wetlands.

(iv) Parts of utilized wetlands will be set aside for conservation activities and/or protected from modification, drainage or exploitation

Explanation: Conservation of some wetlands to protect indigenous species of plants and animals is essential for the future biodiversity of Uganda. Many attributes of wetlands remain to be discovered and therefore, complete protection of certain ecologically important wetlands is necessary. Uganda already has an internationally important wetland

at Lake George, and also other important wetlands outside the reserves, e.g. the edges of Lake Victoria need to be protected.

7.5 Water supply and effluent treatment

Rapid population growth and the increasing rate of development require sufficient and steady amount of water supply and discharge of effluent at an affordable cost. Many urban settlements including Kampala City are dependent on wetlands for water supply, treatment and discharge of effluent.

Strategy

(i) Any wetland serving as a source of water supply or receiving effluent as part of a designated service to any human settlement shall be declared a fully protected wetland from any encroachment, drainage or modification.

Explanation: Wetlands can preserve the purity of water by their filtration capacity. One of the important reasons for this policy arises from extensive draining of wetlands for horticulture where these areas also serve as water purification centres. Such drainage has led to a dangerous situation where farmers and members of the community may come into bodily contact with raw sewage during farming and domestic activities.

7.6 Tenure and use

Wetlands have in many instances been referred to as "wastelands". In order to elevate wetlands from this status and to recognise them as a useful resource, there is need for the Government to continue having control over their management, until such a time that developers have understood the role and importance of wetlands in the environment.

Strategies

(i) All wetlands are a public resource to be controlled by the Government on behalf of the public. There shall be no leasing of any wetland to any person or organisation in Uganda at any given moment and for whatever reason.

- (ii) However, communal use will be permitted, but only if environmental conservation and sustainable use principles and strategies of this policy are adhered to. This communal use may be terminated by the Government if it is found that the community or any person has not adhered to the environmental obligations, principles and strategies of this policy.
- (iii) All future land tenure documents including maps and layouts will indicate whether the area contains a wetland and will accordingly exclude these wetlands from tenure.
- (iv) The layout will further be advertised in the parish where land is to be given out for a period of 30 days.
- (v) Government will include wetland conservation considerations in its national land use plan so as to maintain the ecological character of wetlands.
- (vi) Government will issue permits for wetland developers and users. It also reserves the right, for the national and public good, to issue a permit to a single authority for the management of an entire wetland on behalf of the community.

Explanation: Wetlands belong to the public but contrary to what might be expected from this ownership status, the Uganda Land Commission has often leased wetlands. Government consequently lost control of any protective or conservatory requirements. The maps used for the leasing inadequately distinguished wetlands from the surrounding dry land and the layouts were not widely advertized. While there is a necessity to prevent the sequestering of wetland resources into the hands of a few private lessees, this has to be balanced against the legitimate needs of users who will not be encouraged to use long term environmentally sound practices unless guarantees of long term occupation exist and consequently there is freedom from interference by conflicting users.

7.7 Recovery of previously drained wetlands

Many wetlands have been drained or modified especially in South west and eastern Uganda. This has led to loss of many would-be valuable resources before a full assessment has been carried out.

Strategy

(i) Government may require that some wetlands which have already been drained, should be allowed to regenerate. For this purpose, Government aims at restoring the soil hydration so as to re-establish the wetlands vegetation as far as is ecologically possible. Such an operation may range from rehabilitation of wetlands along distance channels in the case of lease holder, to full rehabilitation after the lease has been cancelled or eviction in case of users with no leases.

Explanation: Previous Government policies, especially in the colonial and immediate post-colonial eras, allowed utilization of wetlands in a "planned" way. However, no guidelines were given and in the process that policy has been found to be unsustainable and led to massive drainage especially in Kabale, Bushenyi and Iganga. New schemes (rice) have tended to make people copy such massive drainage and this has led to adverse effects.

7.8 Environmental Impact Assessment (EIA) and Monitoring

Development activities in general tend to impact upon natural resources and the environment in various ways. Assessment and evaluation of such impacts helps to minimize the economic and social costs of preventing damage before occurrence as compared to restoring a degraded wetland.

Strategies

(i) There will be a requirement that all proposed modifications and restorations on wetlands be subject to an EIA, the result of which will determine whether such restoration or modification should proceed and if so to what extent.

(ii) All planned new wetland developments will be subjected to an EIA process to determine the required environmental controls.

(iii) Those which have been subjected to EIAs will continuously be monitored to assess their impact on the environment and where the impact is detrimental, Government will require that such a development be halted.

Explanation: An Environmental Impact Assessment (EIA) is a detailed technical document which determines the legally binding environmental management measures to be incorporated into an economic development programme. EIAs are an essential management tool of any environmentally sound development planning in any society.

7.9 Developing public awareness

Very often wetlands are degraded because the public is either not fully aware or do not appreciate the diversity of values and functions of wetlands. Public awareness is therefore essential in creating a commitment and positive attitude towards conservation and sustainable utilisation of wetland resources.

Government will promote public awareness and understanding of wetland resources and actively encourage participation of the public, local government authorities and institutions. This recognises that implementation of this policy depends on whether it is realistic in terms of social acceptability and technical feasibility. In this regard the following measures and strategies will be taken:

Strategies

(i) Design and deliver a National Public Awareness campaign on wetlands resources in cooperation with other natural resource sectors of the country and target such awareness at the wetland resource users.

(ii) Ensure that the public awareness campaign is integrated with other resources users' campaigns both at district and national levels.

(iii) Disseminate awareness on the importance of wetlands through leaflets, posters, radio, television and other media.

- (iv) Ensure wide circulation of guidelines for wetlands developers.
- (v) Develop specific rural wetland development demonstration projects with the aim of giving local communities better management capabilities of wetland resources.
- (vi) Periodically monitor the public response on the need to conserve wetlands in Uganda.

7.10 Research and Inventory

Demand-driven research is critical for understanding natural resources such as wetlands. The fact that wetlands account for about 10% of the total land area justifies the need for research and inventories to be conducted. In addition, not enough research has been carried out on the viability of wetland resources.

Strategies

- (i) Carry out research into wetland values and functions so as to determine their capacity to perform their various functions.
- (ii) Carry out a full inventory of wetlands to determine their location, status and human values.

7.11 Capacity Building

One of the reasons for the unabated degradation of wetlands has been the inadequate human capacity to manage, understand and give appropriate advice on wetland management. There are indeed very few cadres knowledgeable in the efficient management of wetland resources.

Strategies

- (i) Government will re-train extension staff of relevant line ministries at District level to equip them with knowledge and skills to facilitate their supervisory role.

(ii) Government will also establish a mechanism and develop capacity for carrying out Environment Impact Assessments on proposed wetland development projects.

7.12 Promoting International actions

Wetland resources have trans-boundary significance. They serve as habitats for migratory waterfowl and other fauna, and therefore inevitably require regional and global approaches.

Strategies

(i) Government will promote and actively participate in regional and international efforts to conserve and sustainably utilize wetlands and encourage the involvement of other Countries in the conservation of wetland resources.

(ii) Government will continue to promote her participation in the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1971) and other conventions and treaties which are related to wetlands conservation including designating more areas as wetlands of International Importance.

(iii) In addition, Government will endeavor to promote the conservation and maintenance of the ecological character of Lake George as a wetland of International Importance.

7.13 Wetlands legislation and Institutional arrangements

Wetlands have been marginalised and regarded as 'wastelands'. They therefore, need a strong government institutional arrangement and a sectoral national legislation in order to reverse the high rate of degradation and ensure sustainable management. Since wetlands are a multi-sectoral resource, there is need to create and establish an appropriate institutional arrangement for their management.

Although there are sectoral laws that refer to some aspects of wetlands such as water, or land or prevention of pollution, there is no comprehensive law for management of wetlands as an ecological entity.

Strategies

- (i) Enact a national law for regulating the management of wetland resources
- (ii) Encourage district authorities to make bye-laws for the proper management of wetlands
- (iii) Disseminate the broad guidelines provided herein, to district and urban authorities, as well as wetland users, researchers, academic institutions etc.
- (iv) Establish an inter-ministerial policy implementation institution.

ANNEX 1

GUIDELINES FOR WETLAND RESOURCE DEVELOPERS

Introduction

These guidelines are intended for persons proposing to use wetlands, for purposes of increasing the production of food and other goods and services. All users of wetlands are reminded that wetlands are a national resource and that the principles of environmentally sound management and sustainable use, as declared in the National Policy for Wetland Resource Management, must be applied to such use, and as defined herein.

No Drainage of wetlands

Drainage may be defined as the artificial large scale removal or exclusion of water from a wetland, which lowers the water table so that it does not rise to the soil surface. This practice radically alters the potential of the wetland and destroys its function as a natural regulator of water flow and storage. It is recognised that in the interest of the other principles listed, some modifications of water may be necessary.

Definition of Sustainable Use of Wetlands

Sustainable use is defined as the practice of wetland utilisation which will ensure that the production of goods or services derived from that use, are available at the same level in perpetuity. For example, yields from a fishing activity should be set at a level that can be maintained for the foreseeable future, i.e. sustainably.

Environmentally sound Management

A key issue in the management of any resource is whether that management causes adverse effects on the environment.

For example, the production of bricks from clay soil in a wetland leads to destruction and deforestation around the brick-making kilns, which is environmentally damaging and therefore unsound. However, the smoking of fish caught near a wetland, using papyrus briquettes or in semi-dried form, for fuel may be environmentally sound and will avoid the depletion of wood fuel supplies in the area.

Optimum diversity of use and users

Maintaining a diversity of traditional uses, and perhaps adding new uses where appropriate, means that the diversity of fauna and flora are retained in the wetland. This in turn will optimise the harvestable yield and ensure flexibility for later adaptations to changing circumstances.

Development through Environment Impact Assessment.

An Environment Impact Assessment (EIA) is a detailed technical document which determines the legally binding environmental management measures to be incorporated into an economic development programme. EIAs will be carried out by people knowledgeable in practical aspects of wetland management and the relevant economic and sociological aspects of the development. The administration of EIAs will be an important activity of environmental management.

SPECIFIC GUIDELINES

It should be understood that these guidelines are an on-going process and they will be supplemented as more information becomes available.

1. TRADITIONAL USES AND ACCESS RIGHTS

People living adjacent to a wetland may have been deriving benefits from that wetland for many years. These benefits may include cutting of trees, reeds, water supply, fishing, grazing etc. Any change of use of a wetland must allow those traditional uses to continue, without loss or hindrance of any other user.

2. WATER BALANCE ACTIVITIES

(a) Users of a wetland must ensure that the overall water balance is maintained so that the surface does not dry out.

Ridging and trenching may be performed within the wetland, allowing the growth of crops requiring drier soils, as long as the water level does not fall below about 0.5 metres from the top of the ridges.

A wetland shall under no circumstances be drained.

b) Bunding of fields to control the water level within the wetland must similarly ensure that the water table does not fall below about 0.5 metres of the soil surface.

3. PAPYRUS HARVESTING

Harvesting papyrus is a traditional usage which should always be catered for in the planning of multi-purpose use of wetlands. The frequency of harvesting one area should not be greater than once in every 15 months, otherwise the rate of growth and the amount which can be harvested will decline

Separate areas should be set aside to be harvested in sequence, so that a continuous supply of papyrus can be maintained.

On no account should papyrus be burnt, as doing so reduces the amount which can be harvested.

4. NATURAL FISH STOCKS

The catching of those species of fish which normally inhabit wetlands should be encouraged. However, to prevent the fish stocks from being over fished, the mesh size of gill nets should not be less than 2 inches (stretch dimension). Traditional catching methods using traps and spears need not be restricted.

It is allowed that the populations of these fish can be increased by constructing channels at the edges of wetlands and by excavating ponds.

5. FISH CULTURE AND FISH PONDS

(a) Fish ponds constructed within a wetland should be constructed on the sloping sides of the wetland. The recommended practice is to make use of gravity flow of water from the spring line which often arises from the soils at the edges of wetlands. Waste water from the ponds may be allowed to flow into the wetland. It is unwise to site a fish pond low in a wetland, as seasonal flooding can cause loss of stock and damage to bunding.

(b) No fish species may be cultured that is not indigenous to the wetland without specific permission in writing from the Commissioner of Fisheries in consultation with the Department of Environment Protection (DEP).

(c) Wetland vegetation may only be cleared under approval from the District authorities. Excavation of fish ponds into a wetland must preserve a favourable ratio of surface area to perimeter of vegetation. Individual ponds should not exceed a size of 1000 square metres (0.1 hectares), and there should be sufficient uncleared vegetation separating the ponds for use by other activities.

6. GRAZING OF CATTLE

(a) Grazing of cattle in wetlands, particularly seasonal wetlands, is permitted but this should be considered as a public amenity to all those who require it, and fencing should not be erected to exclude any user or group of users.

(b) Notwithstanding paragraph 6 a, above, there will be a maximum total number of cattle which will be able to use the productivity of the wetland sustainably. This number will vary from place to place, and so planners should seek specialist advice from the ministry responsible for advice on the best numbers to be kept in any particular wetland. They should also undertake to obtain the cooperation of the cattle owners in this regard.

(c) The practice of annual burning of wetlands is banned unless beneficial management from such activity is demonstrated to the District authorities and is approved.

7. PROTECTION OF THE CATCHMENT AREA

It must be ensured that all areas upstream of a wetland are properly managed to prevent wetland degradation. Wetland plants should also be encouraged to grow at the edges of river banks.

8. CONTROL OF ACTIVITIES IN WETLANDS

The District authorities will control all activities in wetlands by regulating brick-making, requiring that the brick-makers form a voluntary society and be licensed in accordance with the National Policy on the Management of Wetland Resources.

PROCEDURES RECOMMENDED TO BE FOLLOWED BY PROSPECTIVE WETLAND RESOURCE DEVELOPERS

Unless the total area to be developed is less than 0.25 hectares, or as may be determined by the authorities, any developer shall provide an appropriate Environmental Impact Assessment based on the following:

(a) Identify the wetland on a map at a scale of 1:50,000 and describe the current use of the wetland.

(b) Describe the intended use of the wetland development by:

(i) Stating whether the use is for the benefit of an individual, a private company, cooperative society or a community organisation.

(ii) Providing a detailed description of the proposed activity e.g. farming, fishing.

(iii) Demonstrating that the proposed activity benefits the community, the economy and that it is both environmentally sound and sustainable.

(c) The completed application and the E.I.A. should be sent to the District authorities, and copied to the Department of Environment Protection, after approval by the RC1, RC2, RC3 committees in the area concerned.

(d) Any costs involved will be borne by the Developer.

PROCEDURES TO BE FOLLOWED BY THE DISTRICT AUTHORITIES AFTER RECEIPT OF AN APPLICATION

The District Resistance Council (DRC) should satisfy itself that the application has been properly considered by the lower RCs and should consult with the District Development Committee (DDC) on the appropriateness of the application. The DRC will as far as possible follow the guidelines herein provided.

(a) Inspect the proposed site and assess the likely impact of the development upon the environment, other users and the surrounding communities.

(b) Evaluate the environment impact assessment.

(c) Consult relevant Government departments for their advice.

(d) Upon receipt of advice, the DDC may come to a decision and recommend to the DRC that the proposal be accepted, modified or rejected.

(e) The DRC may direct as to whom will bear the cost of the approval or rejection of the proposal.

(f) The DRC may impose any other conditions as may be appropriate.

CRITERIA FOR THE DRC IN CONSIDERING APPLICATIONS

(1) At no one time should the entire area of a wetland be fully developed.

(2) There should not be "too many" developments within a wetland.

(3) Some representative wetlands or parts thereof should be left intact in a given area.

The local authorities will exercise reasonable discretion on the exact area of wetlands to be developed in accordance with the National Wetlands Policy and other prevailing policies on natural resources and the environment.

Ministry of Natural Resources