NILE BASIN INITIATIVE SHARED VISION PROGRAM

PILLAR D – Socio-Economic, Environmental and Sectoral Analysis

Environmental Analysis And Management Component

COUNTRY: Uganda

PREPARED BY JUSTIN ECAAT
NATONAL CONSULTANT

EXECUTIVE SUMMARY

The Nile river provides immense opportunities for socio-economic development by supporting a diversity of economic activities including hydro-power development, irrigation, fishing and many other social benefits. However, despite all these, the Nile basin remains one of the poorest regions in the world.

In order to address this situation, the ten riparian countries have agreed to co-operate in order to foster regional social and economic development in the basin.

Among the areas of focus proposed for co-operation under the Nile Basin Initiative is the area environment and natural resources management. This follows a recognition that there is still unsustainable natural resources use and widespread degradation of natural resources and the Nile resources as well.

Following a series of consultations at a national level, it is clear that the Nile sector in Uganda is faced with a number of environmental problems which include, among others:

- continued land degradation due to deforestation and poor land-use practices,
- water quality degradation through pollution of water bodies due to discharge of un-treated industrial effluents and silt discharge from the catchment,
- Continued degradation of wetlands and fragile lake-edge and riverine ecosystems a rising from need to expand agricultural land.
- It also became clear that the reasons for land degradation are closely linked to poverty and heavy reliance on natural resources for provision of energy and other socio-economic needs.

The Government of Uganda, under its Poverty Eradication Action Plan, recognizes that the national stock of natural resources is under increasing threat of degradation and depletion attributed to, among others, increasing population and unsustainable resource utilization. The strategy adopted by Government with respect to the use of natural resources to eradicate poverty hinges on:

- conservation of natural resources; soil, forests, biomass, water, wetlands and wildlife;

- enforcing of laws that promote sustainable use of resources,

- intensifying public education and awareness campaigns on the vicious circle of environmental degradation and poverty, and

- promotion of good resource husbandry that takes care of environmental concerns.

Water quality concerns within Lake Victoria catchment are of international concern since the quality of water in Lake Victoria governs the basic water quality in the upper part of the Nile system and also impacts the lower areas. Similarly, Uganda shares the Semliki River with the Democratic Republic of Congo, and the basic water quality of the Semliki River is thus governed by the characteristics of the Uganda Rwenzori catchment as well as activities in the zaire section

which contribute to the character of water in the lower lake Albert and further downstream the Nile.

In order to address the above problems, a number of actions have been proposed, and include the following, among others:

- Enhancing tree planting programmes in order to stem continued land degradation,
- Creating awareness among riparian communities to improve their land-use practices and to understand the link between land-use activities and the health and productivity of the Nile basin water resources,
- Stepping up enforcement of existing laws for protection of wetlands, lake shore and riverine ecosystems,
- Exploring opportunities for alternative economic activities for riparian communities other than sole reliance on natural resources.

In order for the actions proposed by Uganda to have impact at a regional and basin-wide level, it is also proposed that there will be need for harmonization of policies, laws and strategies for sound management of certain key natural resources such as wetlands and for control of activities such industrial emissions. This harmonization is also expected to include harmonization of environmental standards for emissions that affect the Nile resources throughout the basin. The detailed account of the recommended actions is contained in this report.

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Chapter 1: BACKGROUND AND INTRODUCTION

1.0 Background

The Nile river is shared by 10 riparian countries: Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda. Half of these countries are among the world's ten poorest countries. Today the Basin is characterized by poverty, instability, rapid population growth, and environmental degradation. Control of Nile waters has long been a source of dispute and potential conflict in the region. Yet, the Nile also holds great potential to foster regional social and economic development through power generation, food production, transportation, trade, environmental conservation, and other related development activities. To realize this potential, the riparians have come to recognize that they must take concrete steps to address these challenges and that cooperative development holds the greatest prospect of bringing mutual benefits to the region.

The Nile riparians have taken a historic step towards cooperation in the establishment of the Nile Basin Initiative (NBI). Formally launched in February 1999, the Initiative is a transitional institutional mechanism which provides an agreed basin-wide framework to fight poverty and promote economic development. The NBI is guided by a shared vision "to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin water resources." The NBI is comprised of the Council of Ministers of Water Affairs of the Nile Basin States (Nile-COM), a Technical Advisory Committee (Nile-TAC), and a Secretariat (Nile-SEC) located in Entebbe, Uganda. The formation of the NBI and on-going riparian dialogue is supported by the World Bank, UNDP, and CIDA.

The NBI has articulated a shared vision, established a transitional institutional mechanism, and formulated general guidelines to facilitate cooperative development in the Nile Basin. To translate the shared vision into action, the NBI has also initiated a Strategic Action Program, which includes two complementary components: (1) a basin-wide Shared Vision Program (SVP) and (2) Subsidiary Action Programs (SAP). The SVP will include a series of projects, such as capacity building, studies, and participatory activities to be implemented basin-wide to create an enabling environment for cooperative development. In parallel, appropriate groupings of countries (two or more) will initiate SAPs to define and implement investment projects that confer mutual benefits at the sub-basin level.

The SVP encompasses five broad theme areas, referred to as 'pillars':

Cooperative Framework (on-going UNDP sponsored D3 Project)

Confidence Building and Stakeholder Involvement [Pillar C]

Socio-economic, Environmental and Sectoral Analyses [Pillar D]

Water Resources Planning and Management [Pillar E].

Applied Training [Pillar F].

Pillar D addresses five components: (i) Efficient water use for agricultural production; (ii) Socio-economic/poverty diagnostic study; (iii) Assessment of opportunities for power trade and pooling; (iv) Environmental analysis and management and (v) Opportunities for integrated infrastructure development.

There is clear recognition within the Nile Basin Initiative that the development of Nile waters

must be environmentally sustainable in the long-term. This is reinforced by the fact that the Nile is widely perceived as an environmental issue of global concern. Identifying the environment and development synergies, and thus the sustainable development opportunities, will be a major task for the initiative.

The Environmental Analysis and Management component of Pillar D will contribute to developing a strategic framework for environmentally sustainable development of the Nile River Basin, improve the understanding of the relationship of water resources development and the environment in the Basin, and provide a forum to discuss development paths for the Nile with a wide range of stakeholders.

Environmental management studies and actions in the Nile Basin have thus far been largely undertaken on a national basis, and not with a transboundary vision. The present component will help to translate existing national environmental commitments and interest into regional and basin-wide analytical frameworks and eventually basin-wide actions.

The Environmental component within Pillar D will consist of two components with one output funded by the GEF and one output funded by the USAID. The GEF resources will support the preparation of a basin wide environment project (to be funded by the GEF), which will be presented to ICCON1. The USAID resources will support a transboundary environmental analysis, which will produce a bibliographical study and serve as reference for relevant information. The environmental analysis and management component of Pillar D will also coordinate with two other Pillars (Pillars C [confidence building and communication] and F [applied training and capacity building].

1.1 General national characteristics of the Nile

The Uganda territory is situated entirely within the Nile basin. The Nile and the equatorial lakes (Victoria, Kyoga, Edward, George and Albert) are dominant features of the surface water resources in the Upper Nile region.

The upstream Nile waters in Uganda start from Jinja as an outflow from Lake Victoria, and flows through a deeply incised U-shaped river channel with deep and high banks, with sharp cliffs at the edges which tend to limit access to the river. This U-shaped and deep channel sometimes reaches about 10 - 20 m above the river.

The Nile channel from the Owen Falls dam is characterized by resistant intrusive igneous rocks that are responsible for the formation of the numerous water rapids, falls and islands. However, as the river flows further downstream, the river valley consists of a combination of steep slopes and relatively flat river terraces. In the flat areas, such as in the Lake Kyoga region, the river banks are conspicuously characterized by riverine wetland systems.

The Nile River has an average flow of 941 m^3/s. However, the flows in the Victoria Nile are determined artificially from the lake level by releases at the Owen Falls, in accordance with the internationally accepted Agreed Curve.

Since 1982, the Lake Victoria level has equilibrated at around 11.85 m on the Jinja gauge, equivalent to an outflow of about 1,000 m^3/s. However, there has been a sharp rise in the level since the end of 1997, and as of June 1998, the level at the gauge was approximately 12.5 m, corresponding to a release of approximately 1,550 m^3/s. Since there is regulated outflow of the river by the Owen Falls dam, there is little seasonal variation in flows in the downstream Nile, save for evaporation losses equivalent to up-to 60 m3/s in the shallow Lake Kyoga.

1.2 Lake Victoria and other Equatorial lakes

Lake Victoria is the world's second largest freshwater lake and the largest freshwater lake in Africa with a surface area of 68,800 km^2. It has a volume of 2,760 Km^3 and an average depth of 40 m. The lake is a shared resource between Kenya 96%0, Uganda (45% with a total area of 38,800 sq. km.) and Tanzania (49%). The ecosystem of Lake Victoria has undergone substantial and mostly negative changes especially over the last thirty years largely due to, among others, nutrient enrichment from anthropogenic activities in the catchment leading to eutrophication and upset of ecological balance in the lake ecosystem.

Other major lakes in the Nile basin include lakes Kyoga, Edward, George and Albert. The main characteristics of these lakes are summarized in the table below.

Table 1: Main Characteristics of the Equatorial lakes

Lake	**Land catchment (1000 (Km^2)**	**Lake surface (1000 (Km^2)**	**Max. Depth (m)**
Lake Victoria	193	69.0	82
Lake Kyoga	75	6.3	7
Lake Albert	17	5.3	51
Lake George	8	2.2	3
Lake Edward	12	0.3	117

1.3 Rivers an Tributaries

The most notable rivers flowing into Lake Victoria are the Nzoia, Sio, Yala, Kibos, Nyando and Migori Rivers from Kenya, the Mara, Kagera, Simiyu and Mori rivers from Tanzania and the Kagera and Katonga rivers feeding from southern Uganda. The Nile flows northwards through Lake Kyoga and Lake Albert before entering Sudan. In Lake Albert, the Nile is joined by the only major tributary within the Uganda territory, namely the Semliki River. This river drains Lakes George and Edward.

A number of other rivers flow through the foothills of Mt. Elgon and feed into Lake Kyoga. These include the River Manafwa that drains into the River Mpologoma. River Aswa

originates in the hills of Karamoja and finally enters the Nile River after having crossed the border between Uganda and Sudan.

1.4 Nile water resources use

The allocation of available water resources for different uses, and prioritization between different competing uses requires knowledge of available water resources and the extent of present and possible future exploitation, and a mechanism to regulate water extractions and discharges.

According to the Uganda Water Action Plan, the upper Nile system, comprised of the Equatorial Lakes and the Nile from the outlet at Lake Victoria to the Sudanese border, represents a huge water resource and is the basis for a broad range of economic and development activities.

1.4.1 Urban and Rural Water supply.

Lake Victoria is the basis of water supply for Entebbe, Jinja and Kampala. Although these towns have a significant water demand now and an anticipated future demand totalling 56 Mill m^3/year (1.8 m^3/sec), this usage is only 0.2% of the average outflow from the lake. The requirement for the lake and the upper Nile river to act as a recipient for domestic and industrial waste water from Kampala and Jinja is, however, a critical element in as far as water quality is concerned.

In addition to urban water demands, a majority of the Uganda rural communities within the catchment abstract water for domestic use directly from the lake and the river Nile and other rivers in the catchment.

Other major water supply demands include:

- demand for the industrial sector concentrated mainly within Jinja and Kampala, all of which draw water from lake Victoria and the River Nile, and

- Demand for livestock.

1.4.2 Hydro-power development

The Uganda sector of the Nile is a vast resource in terms of hydro-power potential. The identified potential is 2700 MW out of which only 180 MW is installed at the moment. In the recent past, there has been increasing agitation to develop the Uganda sector of the Nile for hydro-power development. A number of studies have been conducted on the potential for hydro-power development, and some of the candidate sites for hydro-power development are currently under advanced stages of being developed. These include the Bujagali and Karuma sites expected to generate 250 Mw and between 100 - 200 MW respectively. The Owen Falls dam extension project is nearing completion and is expected to generate an additional 80 MW

when generation starts.

Figure 1 shows the location on the Nile of some of the potential hydro-power development sites.

Figure 1: Location of some of the potential hydro-power development sites on the Nile.

1.4.3 Irrigation

The irrigation potential of the Uganda sector of Nile basin has not been adequately exploited. Despite the fact that there is no tradition of irrigated agriculture in Uganda, and the demand for irrigation water is presently low, it is anticipated that water demands for irrigation may increase when this sector is developed. Once this happens, water demands on the surface water resources may increase, and competition with other water demands will inevitably occur. It is expected that future development of irrigation is likely to involve:

- diversion of rivers on to farmlands,
- pumping of water on to farmlands, and
- construction of costly structures and irrigation infrastructure drawing water from the main rivers, including the Nile.

1.5 Main vegetation types

The main vegetation types found along the Nile basin in Uganda can be classified into several broad categories that include:

- **Forest/savanna mosaics**: which are found within the Lake Victoria region and extend up-to about 50 Km north of the lake. These vegetation type is characterized by isolated forest and savanna tree communities. Most of the forests, however, have now been reduced to relics of previous thick forests due to encroachment by cultivation.

- **Dry-moist combretum savannas**: This is a continuum from the forest-savanna mosaic and extends to the shoreline of Lake Kyoga. These vegetation type is characterized by dense growth of evergreen and deciduous shrubs and small trees with interlocking crowns in the central district of Uganda (Iganga and Kamuli).

- **Wetland communities**: These are particularly dominant at the point of entry of the Nile into Lake Kyoga and extend through the Victoria and Albert Nile systems. These wetland communities have ben formed as a result of impeded drainage and consist of an expanse of several communities of wetland vegetation dominated by *Echinochloa, Sorghastrum, Hyperrhenia and Themeda* spp. The permanently waterlogged areas are characterized by *Cyperus* and *Miscanthidium* communities.

- **Wooded communities**: These are adjacent communities to the swamps lying relatively

inland. These communities are composed of savanna grass communities in the north and west Nile regions. The characteristic vegetation ranges from 2-5 m high of grassland through scattered trees of 5-8 m high to an open canopy of trees underlain by grass. In some areas especially Karuma and along the Murchison National Park, the vegetation is more towards woodland with somewhat closed canopy. The vegetation cover in the areas is maintained through periodic fires.

1.6 Human population in the basin and distribution.

Uganda's population is growing at average rate of 2.5% per year. Since the 1991 national Housing and Population Census, the country's population has increased from 16.7 million and was estimated at over 21 million in 1998, an increase of about 26% in seven years.

According to the 1969, 1980 and 1991 censuses, the average population density stood at 48, 64 and 85 persons/km^2, respectively. By 1998, the density was estimated at 107 persons.km^2.

Uganda's population, however, is unevenly distributed, with a majority of the population living around highland areas which have a high agricultural potential, and around the Lake Victoria crescent.

By virtue of the existence of the major urban centers (Kampala, Jinja, Njeru and Entebbe) close to the shores of Lake Victoria and the Nile, the heavy concentrations of population and human activity in these urban centers has direct impact on the Nile basin resources and environment, with Kampala with well over one million inhabitants, with the growth rate reported at 5.7% per annum.

1.7 Significant urban areas (Location, population and impact on water resources).

The major urban areas located within the Nile basin include the capital city Kampala, with a population of about 1,000,000 million people, and Jinja, with a population of about 70,000 people. According to the 1991 population and housing census, only 11.3% of Uganda's population is urban.

Kampala, the capital city, is ten times larger than the next largest city of Jinja. Kampala's population is expected to grow at a rate of 5.7% per annum between now and 2004 which is double the national growth rate of 2.5% per annum. This will result in an estimated total population of 1.5 million people which is almost double the 774,241 recorded in the 1991 census. Kampala is also the most densely populated district in Uganda with an average of 4,600 persons per sq. km.

With the rapid growth experienced in the cities, mushrooming and unplanned residential areas have outgrown the capacity for service provision, including waste management and efficient disposal. The inadequate sanitary facilities has also meant that most of the domestic sewage is often discharged directly into streams and ultimately into Lake Victoria causing a lot of nutrient loading. The recent proliferation of the water hyacinth in the lake has been partly attributed to this nutrient loading.

Jinja is the second largest urban center in Uganda, with the population as of the 1991 census estimated at 65,169. The existing Municipality of Jinja encompasses an area of approximately 28, Km^2 (2,800 hectares), and is strategically located at the point where the River Nile flows out of Lake Victoria through the Owen Falls dam. The town serves a catchment area of about 3.0 million people. Jinja's current population is expected to grow at 3.5-4.5% per annum to the year 2004, resulting in a total projected population of 95-108,800 persons (ie. 35,000 - 47,000 new persons).

In general, the population structure in most urban centers in Uganda, including Kampala and Jinja, is characterized by the presence of a combination of areas of low-density settlement (having a high level of servicing), with areas of high-density (having low levels of services). Scattered areas of traditional settlements continue to exist within the urban areas, and these vary from low-density shamba settlements of a rural character, to high-density traditional village settlements. Most of these settlements are concentrated pockets of sanitation problems which have contributed significantly to pollution of water bodies through discharge of raw sewage.

Other major sources of water pollution in the urban centers include direct discharge of un-treated industrial effluents into Lake Victoria and the River Nile.

1.8 Climate

The Nile basin in Uganda experiences an equatorial type of climate with two dry and two rainy seasons every year. March to May is a rainy period with April receiving the highest rains. The September to November period constitutes the second rainy season, while December to February, and June to August are the dry periods.

Lake Victoria levels and its hydrology are influenced and dominated by direct rainfall on the lake. The average annual rainfall in Uganda, including the Nile basin varies from 500 mm in the east to 2000 mm around Lake Victoria and the highland and mountainous areas. Observations from stations located on some islands in the lake indicate annual rainfall of up-to 3,000 mm, compared to rainfall at Entebbe of 1,400 mm.

CHAPTER 2: DESCRIPTION OF NATURAL RESOURCES

Uganda is endowed with a rich natural resource base and a generally favourable climate. More than 90% of Uganda's population depends directly on natural resources for their livelihood. However, despite its rich natural resource potential, the country is undergoing rapid environmental degradation due to factors such as high population growth rate, poor agricultural practices and increased pressure on natural resources due to increased economic activity which does not always take into consideration environmental conservation needs.

The major natural resources of economic and environmental importance within the Nile basin include, among others:

(i) Water resources,
(ii). Wetlands,
(iii) Fisheries and other aquatic biodiversity,
(iv) Soils and Land resources,
(iii) Forestry resources,
(iv) Energy resources,
(viii) Terrestrial biodiversity
(ix) Agriculture and livestock resources.

2.1 Water resources

Uganda is endowed with several fresh water lakes and swamps of varying sizes. Of the total area of the country, which is about 241,500 sq. Km, 36,280 sq. Km (representing 15%) are covered by open water. The whole of the Uganda's water resources is part of the Nile basin and includes the five major lakes of Victoria, Kyoga, Albert, George and Edward, as well as the Nile River itself and its tributaries.

The quality and quantity of water has significant impact on the health and well-being of the population and on development in general. However, the rapid increase in the demand for water and its uncontrolled utilization for various purposes have led to water scarcity in some instances, and to its pollution and degradation. For example, water for livestock constitutes a significant from of water use especially in the semi- arid and pastoral areas where surface water sources are scarce and long dry periods experienced. There is a lot of disparity in water distribution both in time and space, leading to temporal and spatial water shortages respectively.

Although exploitation of surface water resources still accounts for more than 50% of the population served, ground-water resources are increasingly taking a center stage, supplying about 8.1 million people (State of Environment Report 1998), representing a 41.5% service level. Over 20 small to medium urban centers with a total population of over 500,000 are presently exploiting ground-water, while a number of institutions and private enterprises have drilled private boreholes to augment supply from surface water.

Ground-water abstraction using motorised pumps mainly for municipal water supplies, however, is expected to impact on the environment and may lead to over exploitation of the resource.

2.2 Wetland Resources

Along the Nile basin, the shores of Lake Victoria and banks of rivers are characterized by fringes of papyrus and other wetland vegetation. These wetlands can thus be classified into two broad categories; namely;

i. wetlands associated with Lake edges notably Lake Victoria and Lake Kyoga wetland systems,

ii. wetlands associated with the streams and rivers, including the River Nile,

The wetland resources have for a long time been associated with a number of values and uses to riparian communities. These include, among others:

- Crafts production, particularly using papyrus and other wetland reeds. These wetland crafts products are of economic value and thus help to sustain and supplement the meager incomes of some of the communities,

- source of traditional medicinal herbs,

- source of fish,

- wetlands support agricultural activity and crops that are sustaining a large population in the basin. Crops grown include yams, sugar cane, bananas, potatoes, maize and vegetables such as beans, tomatoes and cabbages,

- wetlands are also a source of water for domestic use especially for communities not adequately supplied with piped water.

- wetlands are traditional grazing areas and sustain livestock populations especially during drought.

Other wetland values include:

- Treatment and purification of sewerage effluent. Wetlands play an important role by virtue of their capacity to cleanse polluted waters and protect the water bodies from pollution.

2.2.1 Current status of the wetlands in the Nile basin.

The wetlands resources in most parts of Uganda, including the Nile basin have been heavily encroached upon by human activities, including crop cultivation. As a consequence, the area they occupy is reported to be diminishing. The former dominant natural vegetation of papyrus and palms has in most places been replaced by crops grown by encroachers, while wildlife and fish is also reported to be getting displaced by this encroachment.

The encroachment for agricultural purposes is based on a belief that wetland soils are more fertile and hence more productive, and because they are wet all year round, they support agricultural activities even at times when no farming is possible in non wetland areas.

Other activities that have contributed to wetland degradation include sand mining and brick making.

2.3 Fisheries and other aquatic biodiversity

Fishing constitutes a very important activity in the equatorial lakes and rivers in the Nile basin, and provides a source of food, income and employment to riparian communities.

Lake Victoria, for example, has traditionally had a complex, multi-species fishery, previously dominated by the Tilapine and Haplochromine cichlids, until in the recent years when the Nile perch (*Lates niloticus*) was introduced and is said to have caused a decline in other species. Other major fish species caught include *Tilapia*, *Bagrus docmac* (locally known as Semutundu), *Mormirus* sp., *Proptopterus aethiopicus (mamba), Rastrineobola sp. (mukene)* etc.

In the recent years, there has been increased investment in the fish processing and export sector with significant contribution to the economy during 1999. Lake Victoria alone is estimated to have a present fishery value to the lake community of US$ 300-600 million. Based on the introduction of the Nile Perch, Lake Victoria is the largest freshwater fishery in the world.

2.4 Soils and Land resources

Uganda has no national soils policy, nor even a land-use policy, although there is some initiative on the preparation of a soils policy. Currently a national policy on soils is being formulated by the Department of Agriculture, and it is expected that it will be in harmony with the current environmental concerns of soil erosion, retention of water and conservation of wetlands.

2.5 Forest resources

The forest cover in Uganda is about 20% of the country's total land area, with only 8% of this being protected. The forest estate can be categorized into the following broad categories:

i. Tropical high forests which are either fully stocked or encroached (estimated to be about 3% of the total land area of the country),

ii. Plantations of mainly coniferous or broad leaved species, making up about 2.2% of the gazetted forest area as estimated in the State of Environment Report 1996,

iii. Woodlands and forests outside protected areas, constituting about 60% of the total forest cover in the country.

The forest estate in Uganda is under different institutional mandates as shown below:

Ownership	Area (Mill hectares)	
Forest under Forest Dept.	0.79	
Reserves by Forest Dept but non-forested		0.41
Forest Under Uganda Wildlife Authority	1.18	
Unprotected (Private forests)	2.96	
Total forest cover	4.93	

By virtue of not being protected like the gazetted forest reserves, the forests outside gazetted areas have suffered severe degradation. According to FAO estimates, forest and woodlands covered about 10,800,000 ha (about 45%) of Uganda's surface area by 1890s. At the beginning of the 1900, Uganda's tropical high forests (THFs) covered 3,090,000 ha or 12.7% of the country. However, since then, the size of the forest estate has shrunk and it is estimated that the tropical high forest estate has been reduced to about 730,000 ha, only about 3% of Uganda's land area.

2.6 Energy resources

The biggest sources of energy in Uganda fall under four main categories, namely, woodfuel (biomass energy), petroleum products, hydro-power (electricity) and renewable energy sources such as solar energy. The total energy consumption in Uganda is estimated at 5 million tones oil equivalent (toe), 96% accounted for by woody biomass (State of Environment Report for Uganda 1998).

Despite the recent increases in use and consumption of other energy sources such as petroleum products, a majority of people in Uganda utilize biomass energy (mainly fuelwood) which accounts for over 90% of the country's energy needs, while only about 5% of the population has access to electricity. In the recent past, there has been further increased demand/consumption of biomass energy. This is due to an increase in population pressure as well as due to lack of affordable alternative sources of energy. The population also largely lacks awareness on energy efficient technologies, while widespread poverty has undermined opportunities for use of other energy sources.

Efforts are being made to improve production and access to other sources of energy through deliberate investment promotion in the energy sector. An Energy Assessment Mission (1996) developed two energy demand forecasts, namely; a base case and high case.The table below shows the base case forecast.

Table 2: Energy demand forecast, base case (% annual growth)

	1990-1995	1996-2005
Total energy demand	3.0	3.0
Electricity	8.0	6.2
Petroleum product	2.1	6.8
Woodfuels	2.9	2.9

Source: State of Environment Report for Uganda, 1998.

2.7 Terrestrial biodiversity

Uganda is endowed with a rich biodiversity, ranging from plant and animal species as well as diversity of ecological systems and habitats. Within the Nile basin, there are a number of protected areas that are a habitat to a diversity of plants and animals. However, the impact of human activities is increasingly causing biodiversity loss. Major threats to terrestrial biodiversity resources include:

- encroachment into protected areas, particularly forest reserves and forest areas outside protected reserves, which also results in siltation of water bodies due to enhanced soil erosion,
- Draining and reclamation of wetlands for cultivation.

2.8 Livestock resources

The major livestock resources in Uganda include cattle, sheep, goats, pigs, rabbits and poultry. The improved breeds of livestock are kept under intensive management mostly on small scale and medium sized farms and zero grazing. The indigenous breeds on the other hand are mainly kept under extensive traditional production systems.

Cattle are reared mainly in the rangelands extending from Moroto and Kotido in the North-East through the flats of Lake Kyoga to Masaka and Ankole.

Livestock accounts for about 15% of agricultural production which is higher in some districts like Karamoja. This contribution is about 9% of the Gross Domestic Production (GDP), but performance has been declining due to, among others land shortage as a result of competition with crop use and limited water supply especially in the dry season.

CHAPTER 3: MAJOR ECONOMIC ACTIVITIES

The main economic activities in the Uganda Sector of the Nile basin include:

- Agriculture (both livestock and crop production),
- Tourism and recreation,
- Fishing,
- Industry and manufacturing,
- Forestry, and
- Mining.

3.1 Agriculture

The economy of the Nile basin in Uganda's is predominantly agricultural with over 90% of the population dependent mainly on subsistence agricultural activities. Agriculture continues to be the lead sector contributing over 50 percent of the GDP, employing 80 percent of the labour force and accounting for more than 90 percent of the commodity exports.

Much of the agriculture along the Nile basin is largely labour intensive, and of inter-cropping system with both cash crops and subsistence crops. Agricultural holdings average about 0.8 ha., although current trends are towards sub-division of land due to customary practices and population increase.

In terms of agricultural land-use, the country can be divided into two ecological zones, the bimodal highlands and the unimodal semi-arid plateau. The bimodal highlands have the highest agricultural potential and cover about 40 percent of the country, supporting 60 percent of the population. The drier plateau with lower population densities is more reliant on livestock (pastoral and agro-pastoral) agricultural systems.

3.1.1 Agricultural land use and interaction with water resources

Within the Nile basin, poor agricultural practices, such as cultivation on steep slopes not suitable for crop production has often led to increased run-off and soil erosion to the detriment of water quality due to increased sediment and nutrient loads. Soil erosion and land degradation are particularly pronounced in the highland areas which are the more favoured for agriculture. Pollution due to pesticide run-off is not yet a severe problem in Uganda, although with plans to modernise agriculture the use of agro-chemicals could increase.

Cultivation down to the lake and river edges is also on the increase and is a source of direct siltation of water bodies. Encroachment into wetlands has also undermined their capacity to provide buffering functions against land-based sources of pollution of the aquatic systems.

3.2 Tourism and recreation

Recent tourism development on the Nile sector in Uganda has included the development of White Water Rafting on the Nile. It is estimated that the total number of white water rafters in Uganda is currently in the range of 7000-8000 per annum, which combines the clients of the two companies running the WWR expeditions (Adrift and Nile River Explorers). The total gross direct value of WWR is estimated to be in the range of US$ 450-650,000 (at 1996/97 prices) and was likely to rise to the range of US 600-650,000 (at 1997/98 prices).

Other tourism attractions on Uganda sector of the Nile basin include falls and rapids, including the Murchison, Karuma, Kalagala and Itanda falls and several other rapids on the Nile.

Whereas the 1993 Integrated Tourism Master Plan identified tourism in Uganda to be 'virtually non-existent", visitor projections optimistically assumed some 33,000 holiday tourists by 1997. However, security problems in some parts of the country may have accounted for the decline in tourist numbers in 1998.

Table 2: National parks visitor statistics 1990 -1998

Year	QENP	MFNP	LMNP	KVNP	BINP	KNP	SNP	MGNP	MENP	RMNP	Total
1990	4,973	6,456	1,213	251	-	-	-	-	-	865	13,758
1991	1,461	3,629	1,543	375	-	-	-	6	-	1,402	8,416
1992	11,627	8,903	2,501	1,067	112	-	-	47	-	1,531	25,788
1993	11,062	6,817	3,687	2,743	1,106	465	350	145	40	1,683	28,098
1994	12,982	7,041	3,962	1,489	2,461	1,890	488	404	280	1,030	32,027
1995	14,990	11,093	5,137	1,766	3,214	3,640	752	854	491	900	42,783
1996	26,981	43,191	8,365	1,903	2,310	4,310	1,005	1,610	755	4,570	95,000
1997	12,778	33,802	9,649	1,883	2,932	2,947	333	2,465	900	296	67,985
1998	2,722(a)	12,099	8,123	553(c)	3,445	1,393	Nil(b)	2,698	1,202	Nil (b)	

QENP= Queen Elizabeth National Park; KNP = Kibale National park; MFNP= Murchison Falls National park; SNV = Semliki National Park; LMNP = Lake Mburo National Park; MGNP = Mgahinga National Park; KVNP = Kidepo Valley National Park; MENP= Mount Elgon National Park; BINP= Bwindi Impenetrable Forest National Park; RMNp = Rwenzori Mountains national Park. (a) Statistics for only four months; (b) Officially closed due to prevailing insecurity; (c) Total number for only 3 months.

3.3 Fishing

Fisheries are very important to Uganda's economy and are based on the extensive and varied aquatic system that covers about 20% of the country's surface area. This system comprises five major lakes (Victoria, Albert, Kyoga, Edward and George)- all of which are within the Nile basin - and other smaller lakes, in addition to rivers and swamps.

Fishing is a major source of income especially for the rural poor, and this industry contributes greatly to the export earnings. It is estimated that in 1996, US$ 45 million was earned from fish exports, putting it next to coffee in export earnings (GoU statistics). The draft Uganda Fisheries Master Plan puts the average income for full-time fishermen in Uganda at c. $280 or USh 420,000 per annum.

The fishing industry is estimated to employ about 75, 000 fishermen throughout the country, while about 700,000 other people are employed in fisheries related activities such as marketing an trade, net making, boat construction etc.

Other than the Albert Nile, riverine fisheries in most of Uganda are largely at subsistence level with fish being caught mainly for domestic consumption. However, commercial fisheries are supported by the lake-based fisheries and also at the river mouth such as in areas such as Kyankole where the River Nile flows into Lake Kyoga.

3.4 Industry and manufacturing.

As a result of economic policies that are supportive of private investment, the industrial sector has steadily picked up, achieving real growth of 11.1 during the fiscal year 1998/99. However, the share of the manufacturing sector in GDP is still relatively small at about 5 percent. Within the Nile basin, the industrial sector is largely constituted by agro-based industries such as sugar processing, as well as other industries like breweries and soft drinks factories. It is, however, important to note that the concentration of most of the industrial establishment in Uganda is within close proximity to the Nile and Lake Victoria in Kampala and Jinja.

3.5 Forestry sector

The Forestry sector, as of 1998, accounted for 1.9% of the GDP compared to 1.8% in 1996 and 1997. The forestry sector also plays an important role in the economy, providing about 96% of the total amount of energy consumed in the country. However, official statistics have for along time under-estimated the contribution of the sector to the national economy, due to a lack of empirical data and the non-monetary valuation of some of the roles of forests such as soil protection, biodiversity conservation, and water flow regulation. If this sector is to maintain its provision of goods and services, it is necessary to address major pressures which are currently being exerted on the forest resources.

The Forest estate in protected and gazetted areas cover an area of 1,490,600 hectares of which 730,000 hectares (49%) comprise tropical high forest. The rest comprises savanna woodlands (50.3%) and coniferous and eucalyptus plantations (0.7%). It is, however, noteworthy that

about 50% of the woody biomass is outside protected areas and is therefore more prone to degradation due to lack of legislative protection.

3.6 Mining

Mining activities in Uganda are considerably low and therefore their impact on water quality from this sector is presently not a major issue at national scale. However, it is worth noting that at-least one example of local pollution arising from (former) mining activities exists due to acid drainage from stockpiles of cobalt and copper tailings from the previous Kilembe mining operations in Kasese. With this experience and given that Uganda possesses considerable exploitable mineral resources, and investment in this sector is encouraged, proper management is required if water pollution due to mining activities is to be avoided. Figure 2 shows the location of the major mining areas relative to the Nile basin.

Other small scale mining activities which are rampant in the Nile catchment include clay and sand extraction from wetlands. These too are causing environmental degradation of the important wetland systems.

Figure 2: Location of the major mining areas relative to the Nile basin

CHAPTER 4: LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Legal framework

Uganda has enacted a number of sectoral laws that provide the legal framework for management of a number of natural resources including wetlands, forests, water resources, fisheries, and land resources among others. Historically, the environmental laws in Uganda were enacted mainly for the purpose of exploiting the natural resources with little consideration for sustainability and conservation. However, in recent times, there has been increased effort to ensure that the sectoral laws are comprehensive on matters of environment conservation. These laws also emphasize and recognize the cross sectoral linkages with other resources.

4.1.1 The Constitution of the Republic of Uganda

Articles 39 and 41 of the Constitution of Uganda provide that every citizen has a duty to maintain a sound environment, and that every person in Uganda has a right to a healthy and clean environment, and can as such bring action against any pollution or abuse of the environment. Chapter three Section 245 of the Constitution further provides that Parliament shall by law provide measures intended to protect and preserve the environment from abuse, pollution and degradation.

4.1.2 The National Environment Statute, 1995

The National Environment Statute (NES) is a framework law that provides the basic guidelines for sound environmental management.

The NES makes specific provisions for environmental planning and management at national, district and local levels; and for environmental regulation through EIAs and environment audits. Provision is also made for control of pollution and for sound environment management of natural resources. These include lakes and rivers, wetlands, conservation of biological diversity and management of forest resources.

The objective of this Statute is to promote sustainable development by: -

- Establishing the National Environment Management Authority (NEMA) as a coordinating monitoring and supervisory body on all aspects of the environment,

- Integrating environmental requirements into all planning and production processes, and

- Ensuring that renewable resources are optimally used through reduction of waste, use of appropriate technology and finding of alternatives to present exploitative and unsustainable use of resources.

The legal framework for wetlands management, under Section 37 of the National Environment

Statute, provides for protection of wetlands and prohibits any person from:

(a) reclaiming or draining any wetland;
(b) erecting, constructing, placing, altering, extending, removing or demolishing any structure that is fixed in, on, under or over any wetland;
(c) disturbing any wetland by drilling or tunneling in a manner that has or is likely to have an adverse effect on the wetland;
(d) depositing in, on, or under any wetland any substance in a manner that has or is likely to have an adverse effect on the wetland;
(e) destroying, damaging or disturbing any wetland in a manner that has or is likely to have an adverse effect on any plant or animal or its habitat;
(f) introducing or planting any exotic or introduced plant or animal in a wetland.

unless permission is granted by the Authority in consultation with appropriate lead agency. Accepted traditional uses are, however, exempted from these provision.

Conservation of biodiversity *in situ* where possible, and *ex situ* where not, is provided for. These provisions are further elaborated in the Uganda Wildlife Statute, 1996.

4.1.2.1 National Environment (Wetlands, river banks and lake shore management) Regulations, 2000

Regulations on management of wetlands, river banks and lake shores are among the latest Regulations to be gazetted and have added to the legal framework for regulation of land use with direct relevance to the Nile basin environment management. These Regulations have the following objectives, among others:

a). to provide for the conservation and wise use of wetlands and their resources in Uganda,
b). ensure water catchment conservation and flood control,
c). ensure the sustainable use of wetlands for ecological and tourism purposes for the common good of all citizens,
d). Ensure that wetlands are protected as habitats for species of fauna and flora, and
e). Minimize and control pollution.

These Regulations also provide for possibility of declaring any wetland as a protected wetland if it is deemed to be of national or international importance. The Regulations also provide that a wetland can be subject to conservation by a local community.

Of special relevance to the Nile basin is the provision in these Regulations which provide for local Governments and Local Environmental Committees to make bye-laws to protect river banks and lake shores within their jurisdiction which are at risk from environmental degradation, as well as bye-laws for promoting soil conservation measures along river banks and lake shores.

4.1.3 The Water Statute, Water Resources and waste Discharge Regulations.

In order to protect water resources in the country, a number of legislations and bye-laws have been developed in the Water Resources sector, the most recent being the Water Statute 1995, the Water Resources Regulations (1998) and the Waste Discharge Regulations (1998). In addition, the Government issued a comprehensive Water Policy.

Section 31, Sub-section (1) of the Water Statute provides for prohibition of pollution of water and stipulates that a person commits an offence who, unless authorized under the Statute, causes or allows:

i. waste to come into contact with any water;
ii. waste to be discharged directly or indirectly into water;
iii. water to be polluted.

The Water Statute also provides for regulation of water abstraction and discharges into water bodies through a water permit system which sets limits for abstraction and standards for discharges into water bodies. To achieve this, Regulations and Standards setting limits for discharge of effluent containing polluting substances into water or land were passed in 1999 and are now in force.

4.1.4 The Uganda Wildlife Statute, 1996

Though the Statute lays emphasis on management of wildlife in wildlife conservation areas, it also provides for the establishment of management plans for wildlife population outside wildlife conservation areas (Section 6(f). Thus wildlife prevalent in wetlands, forests, or other areas that are not designated as wildlife conservation areas can be conserved through this mechanism. The actual implementation of this is, however, a problem.

4.1.5 The Public Health Act 1964

Section 105 of the Public Health Act 1964 imposes a duty on the local authority to take measures to prevent any pollution dangerous to the health of any water supply which the public has a right to use for drinking or domestic use.

4.1.6 Legal framework for management of land resources

Although there is no comprehensive land-use policy in Uganda, the laws which regulate land-use is currently provided by, among others, Town and Country Planning Act (1964), The Surveys Act (1964), The Registration of Titles Act (1964) and the more recent Land Act 1999. These Acts deal with specific areas of land management.

4.1.6.1 The Land Act, 1998

Section 44 of the Land Act 1998 states that a person who owns land shall manage and utilize the land in accordance with the Forest Act, the Mining Act, the National Environment Statute, 1995, the Water Statute 1995, the Uganda Wildlife Statute 1996 and any other law.

In Sub-section (1) of Section 45 of the Land Act, the Government or Local Government shall hold in trust for the people and protect natural lakes, rivers, ground water, natural streams, wetlands, forest reserves, national parks and any other land reserved for ecological and tourism purposes for the common good of all the citizens of Uganda. In effect the Land Act provides conditions to ensure that natural resources are utilized sustainably and not abused in the process of socio-economic development.

4.1.7 Legal framework for control of pollution and waste generation

The National Environment Statute provides for pollution control and restricts discharge of hazardous substances, chemicals and materials or oil into the environment. In order to provide further regulation of handling and disposal of wastes, waste Management Regulations have been gazetted as of December 1999.

As of now, legislation for waste management is contained in the Urban Authorities Act 1964 in the first schedule of Section 3.

However, the provisions of this Act have largely remained unimplemented, and yet increasing trends of urbanization have led to, among other things, the waste management problem getting out of hand.

The National Environment Statute, 1995, vests responsibility for waste management on those who generate the wastes. Section 53 (1) of this Statute states that "Every person has the duty to manage any waste generated by his activities or the activities of those persons working under his direction in such a manner that he does not cause ill health to the person or damage to the environment".

The National Environment Statute mandates the National Environment Authority to issue restoration orders upon those persons who contravene environment management provisions as contained in the law and Environment Management Policy.

4.1.7.1 Legal framework for management of industrial and other wastes.

Following the enactment of the National Environment Statute, the responsibility for management of wastes was vested on those who generate the wastes, including industrial wastes.

Parallel legislation for waste management is provided for under the following laws and regulations:

- The National Environment (Waste Management) Regulations, 1999,
- Urban Authorities Act,
- The Factories Act.
- The Mining Act (1964),
- The Pharmacy and Drugs Act (1970),
- The Petroleum Act (1964) and the petroleum (exploration and Production) Act
- The Factories Act (1964) and
- The Water Works act (1964).

The Waste Management Regulations (1999) provide the legal framework for control of discharge, handling, transportation and safe disposal of wastes.

4.1.8 District Bye-laws

Districts and related lower councils are mandated to formulate their own bye-laws on environment management. Sec. 15 of the NES (1995) stipulates that, NEMA in consultation with the District Resistance Councils, provide guidelines for the

establishment of a committee on the environment for each District, whose functions include among others, to assist in the development and formulation of bye-laws relating to the management of the environment.

4.1.9 International law and international co-operation

There is a growing number of international legal instruments, relating to global and/or regional concerns which Uganda as a member of the international community has responded to. These instruments form an important operational basis for management of natural resources which the world public considers to be of global value.

In line with this international obligation, Uganda has ratified several treaties and conventions. International conventions and protocols protecting the environment to which Uganda is a signatory include, among others:

i. Convention on the Continental Shelf, Geneva (1958)
ii. Convention on Fishing and Conservation of the Living Resources of the High Seas,

Geneva (1958)

iii. Convention on the High Seas, Geneva, 1958

iv. Treaty Banning Nuclear Weapons Tests in the Atmosphere in Outer Space and Under Water, Moscow (1963)

v. Treaty on the Principle Governing the Activities of States in the Exploration and Use of Outer Space including the Moon and Other Celestial Bodies, London, Moscow, Washington (1967)

vi. African Convention on the Conservation of Nature and Natural Resources, Algiers (1968)

vii. Convention on Wetlands of International Importance Especially as Water Fowl Habitat, Ramsar (1971)

viii. Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris (1972)

ix. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Washington (1973)

x. Vienna Convention for the Protection of the Ozone Layer, Vienna (1985)

xi. Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1985.

xii. Convention Concerning Safety in the Use of Asbestos, Geneva, 1986

xiii. The Convention on Biological Diversity, Rio de Janeiro, 1992

xiv. The Rio Earth Summit Framework Convention on Climate Change, New York, 1992

xv. Bamako Convention on the Ban of the Import into Africa and Control of Trans-boundary Movement of Hazardous Wastes Within Africa, Bamako, 1991.

xvi. International Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, Paris, 1994

xvii. Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons, and their Destruction, London, Moscow, Washington, 1972

4.2 Existing Institutional Framework for environment management in Uganda

The institutional framework for environment management recognizes the role that can be played by various actors in environment management. Thus, the various laws in the country have provision for environment management by various actors including:

-National/Central Government institutions,

-Local Governments (Districts authorities)

-Local Environment Committees

-NGOs, and

-Local communities.

Objective XXVII of the Constitution of Uganda clearly states that it is the states responsibility to promote sustainable development and manage natural resources in a balanced and sustainable manner for present and future generations. It further provides that the state should take all possible measures to prevent or minimize damage and destruction to natural resources

resulting from pollution or other causes.

The Constitution further provides that the State, including Local Governments, shall promote the rational use of natural resources so as to safeguard and protect the biological diversity of Uganda. Article 237 provides that the State or Local Government shall hold in trust for the people and protect natural lakes, rivers, wetlands forest resources, game reserves, national parks and any other land to be reserved for ecological purposes for the common good of all citizens.

The Local Government Act provisions demonstrate the recognition of the important role that local governments and local communities can play in protecting the environment and natural resources in particular.

The institutional framework for environment management in Uganda also includes a sectoral administrative machinery in which management of key resources is vested under specific government ministries and departments with a mandate over certain specific resources. However, because of the cross-cutting nature of environment issues, there are aspects of environment that are not necessarily sector specific, but cut across a number of environmental concerns, hence the creation of NEMA as the principle coordinating agency to harmonize the various sectoral and cross-cutting issues.

4.2.1 National level institutional arrangements for environment management.

4.2.1.1 The National Environment Management Authority

The National Environment Statute established the National Environment Management Authority (NEMA) as the statutory body charged with coordinating, monitoring and supervising all activities in environment management in Uganda, as well as providing an institutional mechanism for ensuring sound environmental planning and integration of environmental considerations into all socio-economic development processes in Uganda.

Though attached to the Ministry of Water, Lands and Environment, the operations of NEMA are guided by a Policy Committee on the Environment (PCE) which is chaired by the Prime Minister. In fulfilling its mandate, NEMA has established both horizontal and vertical linkages with sectoral ministries, and districts respectively.

Horizontal linkages between NEMA and the Ministries/departments are operationalized through the establishment of Environment Liaison Units (ELUs) which act as focal points within the ministries and departments for collection and dissemination of environmental information and for integrating environmental concerns into sectoral policies, plans and programmes.

The vertical linkages on the other hand are operationalised through the establishment of District Environment Offices as well as District and Local Environment Committees.

4.2.1.2 Role of Sectoral Government Agencies in Environment Management

The creation of NEMA did not relieve the sectoral ministries and departments of their role in environmental and natural resources management. Most sectoral ministries and departments have a segment of the environment that falls under their jurisdiction and this implies that they are directly responsible for ensuring environmentally sound utilization of these resources, with NEMA only playing a coordinating role. Thus, the management of sectoral natural resources remains the duty of the relevant line ministries and sectoral departments and institutions in accordance with their respective sectoral policies, and within the framework of cross-sectoral participation required in environment management.

Under this framework, the management of water resources (both ground and surface water resources) falls under the jurisdiction of the Directorate of Water Development, that of wetlands management under the Wetlands Inspectorate in the MWLE, Forests under the Forest Department etc.

4.2.2 Decentralized Governance

Decentralization in Uganda is a democratic reform designed to transfer political, administrative, financial and planning authority from the center to local government councils. It seeks to promote popular participation, empower local people to make own decisions and enhance accountability and responsibility. It also aims at introducing efficiency and effectiveness in the generation and management of resources, and in the delivery of services.

Within the Local Council's administrative structure, elected Local Councils in afive tier system have been established. Through these Councils, popular representation progresses from the smaller local units in villages to the urban or district level Council.

The five tiers of the Local Councils with their corresponding traditional geographical sub-division titles are as follows:

- Local Council I Village
- Local Council II Parish
- Local Council III Sub-county/Town Councils
- Local Council IV County/Municipality
- Local Council V District.

The Local Councils are statutory bodies established by the Decentralization Statute, 1993, and have legislative, administrative and judicial powers. Their functions include, among others, passing of bye-laws, managing affairs of their localities, initiating planning and implementing programmes, including taking decisions on management of the natural resources.

The Local Councils also serve as one of the important avenues to promote community mobilization and participation in efforts geared towards solving problems using a participatory approach. With the current decentralization policy in Uganda, this role is even more crucial

than ever before.

4.2.2.1 District and Local Environment Committees

Of particular interest with regard to environment management is the fact that each level of the local councils is mandated to set up an Environment Committee which is supposed to champion and ensure integration of environment concerns into the planning and development process at their various levels.

At the District level, the Environment Statute puts a lot of responsibility on the local government structure to manage the environment through providing for the establishment of District Environment Committees (DECs) and Local Environment Committees (LECs) which are facilitated by District Environment Officers. The District Environment Officers get technical support from NEMA. The DECs and LECs are responsible for developing Environment Action Plans at District and Sub-county levels (which are the only two planning levels at the district), and mobilize communities for afforestation programmes, adoption of appropriate farming practices, curbing soil erosion, protection of catchment areas and ensuring sound sanitation and environmental health.

4.2.3 Community participation in environment management.

In Uganda, the Local Councils system was conceived against the background of increased need to involve communities in decision making, planning and implementation of activities that affect them. The forums for community involvement are through mobilization organized under the Local Council structures, in particular Local Environment Committees, whose mandate is to provide leadership for environment management at the community levels. Through this system, communities are involved in planning and decision making initiated at the lower Councils, and the decisions made by the different Councils are forwarded to the District and Municipal Councils which co-ordinates and harmonizes the decisions.

4.3 Institutional framework for management of water resources

The recognition of the problems related to water resources, coupled with the multiplicity of uses between competing interests, calls for careful regulation of the resource between the different users. In Uganda the responsibility for ensuring reasonable extraction of water from available sources by large users such as agriculture, industry and town water supplies lies with the Directorate of water Development (DWD). This function is carried out through a water permit system administered by the Water Resources Department in Entebbe. DWD is also responsible for the control of wastewater discharges to surface waters. The mandate of DWD covers the development of water resources infrastructure as well as management and oversight of water resources that are utilized or affected by various development activities such as industry.

DWD has regulatory responsibilities and must issue permits for all surface water abstractions exceeding 400 m^3/day as well as for discharges.

At the more local levels, planning, regulation and monitoring of rural and small towns water supply is expected to be the duty of the local communities and user groups through the Village Water Committees.

According to the Local Government Statute, 1993, water resources services are a district responsibility, but subject to the approval and supervision of the central Government (DWD), while the central government is responsible for management and development of water resources in general, as well as for wastewater discharge. Water resources management, however, requires actions and decisions to be taken at the district and local levels, as well as at the national level. Thus, the district administrations also have a role to play with regard to water resources management. Indeed, the spirit of the statute is that management should take place at the lowest appropriate level.

4.4 Current priority actions for enforcement of environmental requirements relevant to water sector.

The recent focus for enforcement of environment management requirements has centered on the following areas:

- Development of Environment Standards to regulate waste water discharges,

- Enforcement of waste water discharge and water abstraction regulations DWD through a recently introduced water permit system,

- Enforcement of the requirements for Environmental Impact Assessment for planned industrial establishments and Environmental Audits for existing establishments with a view to identifying ways to minimize and control discharges of untreated effluents into water bodies.

- Training and gazetment of staff of sector departments as Environment Inpectors in order to build environment management capacity within the sectors.

In order to broaden the framework and develop capacity within sectors for environment monitoring, the National Environment Management Authority has gazetted a total of 56 Environment Inspectors who will be mandated to carry out inspections and compliance monitoring in various fields of environment. This is expected to contribute to developing and strengthening of environment inspections and monitoring capacity among various sectors other than relying on NEMA alone.

CHAPTER 5 ENVIRONMENT MANAGEMENT IN UGANDA

Uganda Enacted an Environment Statute (NES) in May 1995 and National Environment Management Policy was passed in 1994.

The overall policy goal of the National Environment Management Policy is sustainable social and economic development which maintains and enhances environmental quality and resource productivity to meet the needs of the present generation without compromising the ability of the future generations to meet their own needs.

5.1 Establishment of a Cabinet Policy Committee on the Environment

Because of the need to have a high-level government decision making process with regard to critical environmental issues, a Policy Committee on Environment was established with the following mandate:

- to provide oversight and guidance of NEMA to ensure effective coordination and integration of environmental considerations in the socio-economic development of the country;
- promote multi-sector responsibility and management of the environment and an effective mechanism for governing NEMA;
- Provide high-level political support and vision for environmental management and protection;
- Ensure that environmental concerns are addressed on a national, regional, district and local basis;
- Ensure that environmental issues are incorporated into national social and economic development plans;
- Formulate national environmental policy or policies on the advice of NEMA or other constituted bodies before submission to Cabinet for approval; and
- Oversee NEMA activities.

5.2 The National Environment Management Authority

The National Environment Statute of 1995 established the National Environment Management Authority (NEMA) as the principal agency in Uganda for the co-ordination, monitoring and supervision of all environmental matters.

Although NEMA has the mandate to implement environment management programmes nation-wide, current World Bank funding is only for implementation of programmes in seven focus districts, namely; Kabale, Kasese, Mbarara, Tororo, Mbale, Busia and Arua. The rest of the 38 districts are yet to benefit from investment programmes in the environment sector.

Major activities under implementation in the seven focus districts include, among others:

- Training and capacity building and development of institutional capacity for environment management at district level, including developing capacity of the districts to prepare District Environment Action Plans and preparing District State of Environment report,

- implementation of community-based micro-projects addressing environmental problems such as soil erosion, energy provision and use efficiency, tree planting etc.

Besides capacity development at the district level, NEMA is also engaged in developing capacity of line ministries and departments through training and encouraging the establishment of Environment Liaison Units as focal points for co-ordinating environment matters in their respective ministries and departments.

5.3 Management of water resources

At the national level, the formulation of water management policy is a function of the Water Policy Committee, and this includes defining Uganda's position with regard to cross-border issues of water quantity and quality. Through the Water Policy Committee, national priorities for water and land resources are also formulated, and the Committee also ensures that plans and projects of related Ministries conform to national water resources policies, standards and guidelines. The day to day management of water resources, including regulation of water extraction and waste water discharges to control pollution control is, however, the function of the Directorate of Water Development (DWD).

Under the current decentralized system, DWD fulfills its national obligations for management of water resources through the District Water Offices and through Water and Sanitation Committees and water user groups at the community level.

5.3.1 Monitoring of water resources

Monitoring activities often require knowledge of water resources availability both in time and space. According to the Water Statute, DWD is responsible at the national level for surface water quality monitoring. For sound management of water resources, important parameters to monitor, include, among others:

-Water flow changes,

-Water quality changes,

-Ground water changes, e.g with reference to extractions versus recharge, and

-Pollution sources, etc.

Monitoring functions for water resources are carried out at the national (through DWD), district (district water offices) and the community levels through the Water and Sanitation Committees and water User groups who monitor the condition and use of water resources and facilities, as well as reporting misuse and infringement on regulations.

In order to regulate water abstractions and control discharges of pollutants into water bodies, the Directorate of Water Development has put in place a water permit system and a waste water discharge permit system respectively and these serve as a basis for control and monitoring of abstractions and discharges into water bodies.

5.4 Management of wetland resources

The management of wetland resources is currently under the National Wetlands Conservation and Management Programme under the Wetlands Inspectorate Division of the Ministry of Water, Lands and Environment (MWLE). Uganda has also developed a comprehensive national Wetlands Policy, which has set out the policy framework for wetlands management in Uganda. There is, however, still need for transfer of clear management guidelines to the community level where there is direct human interaction with wetlands.

The Wetlands Policy seeks to promote traditional uses of wetlands, like crafts production, traditional grazing as ell as conservation of wetlands for other ecological values such as biodiversity conservation and habitat for wildlife.

Current efforts in wetlands management focus on the following key activities:

- inventory and mapping of all wetlands in the country. However, inventory has only been accomplished in 5 out of 45 districts,

- development of pilot community-based wetland wise-use approaches that demonstrate sustainable use of wetland resources,

- identification and development of management plans for wetlands of critical conservation value, including identification and designation of wetland Ramsar sites.

5.5. Management of Forest Resources

The management of forest resources in Uganda is vested under the Forest Department of the MWLE.

The Forest Department is broadly mandated to:

i. Protect and manage forest reserves, control of harvesting of trees on public land and advise on sound management of private forests.

ii. Carry out extension services and collaborate with the local communities.

The Departmental Standing Orders (DSO) further explain that, in carrying out its responsibilities, the Forest Department (FD) is guided by a Government declared Forest Policy. The DSO provides that in implementing the Forestry Policy, the following five broad lines of approach will be followed:

- Reservation and protection,
- Management for production,
- Conservation and recreation,
- Research,
- Forestry extension.

From the late 1890s onwards to the 1970s, the various Forest Policy statements issued reflect the service's emphasis on exploitation for economic gains. In particular, the 1977 statement and the Lockwood Report (1973) highlighted the direct monetary value of forests with less emphasis on conservation forestry.

The Current Forest Policy was revised and gazetted in 1987. The provisions in this policy do not also consider forests on private land, and yet these are the ones which have suffered most destruction due to harvesting for fuelwood and other forest products. About 16% of hardwoods on the market are said to come from these private forests (NBU 1992). To address the continued decline in forest resources, the Forestry Policy is currently being reviewed. The new Forest Policy aims to, among others:

i. maintain and safeguard enough forest land so as to ensure sufficient supplies of timber, fuel, paper and other forest products , as well as ensure protection of water supplies, soils , plants and animals, and also provide recreation, research and tourism amenity,

ii. manage the forest estate so as to optimize economic and environmental benefits to the country by ensuring that the forest estate is protected from encroachment so as to promote the preservation of environmental services and conserve biotic diversity.

5.6 Management of Wildlife Resources.

The Uganda Wildlife Authority (UWA) is established in Section 5 of the Uganda Wildlife Statute, 1996, and its functions are laid out in Section 6 of the same Statute. The Authority is charged with the duty of ensuring the sustainable management of wildlife conservation areas; the development and recommendation of policies on wildlife management to Government; and coordinating the implementation of Government policies in the field of wildlife management. In addition, the Authority identifies and recommends areas for declaration as wildlife conservation areas or otherwise; develops, implements and monitors collaborative arrangement for the management of wildlife and establishes policies and procedures for the sustainable utilization of wildlife by and for the benefit of the communities living in proximity to wildlife.

UWA meets the above responsibilities by undertaking research on wildlife conservation, controlling poaching, educating people on the values of wildlife, developing systems of sharing park benefits and resources with local communities and also coordinating with the aim of promoting wildlife conservation.

The Uganda Wildlife Statute (1996) and the Wildlife Policy seek to address the following

national challenges:

i. The protection of areas with high levels of biological diversity that are representative of the major habitats of Uganda;
ii. Sustained management of Uganda's wildlife and the protection of threatened and endangered species;
iii. Involvement of the private sector and communities in wildlife management;
iv. Provision of a framework for the management of wildlife outside protected areas with distinct authorities and rural communities playing a central role;
v. Management of wildlife conservation areas according to a comprehensive national strategy, and approved management plans; an
vi. Establishment of wildlife related monitoring and research which directly contributes to wildlife management and conservation.

Local community incentive measures are highlighted as an important funding principle. The general rule is that people are not supposed to occupy protected areas. The objective of creating protected areas is to protect the country's national parks and wildlife reserves from human settlements and adverse activities. The policy recommends continuous dialogue and negotiation with the local communities within and bordering protected areas, and with the Local Governments in resolving settlement conflicts.

The strategies suggested to attain this include:

- The establishments of clear and easily recognizable boundary markers, which are monitored and controlled;
- Where appropriate and justified, legally designated community enclaves within protected areas.

The policy encourages international and regional cooperation since significant benefits can be realized and effectiveness increased through such arrangements.

Recent focus for wildlife management has centred on the following key areas:

a)• protection of wildlife and biodiversity in tropical high forests through conversion of these forest estates into national parks. Altogether six forest reserves have been converted into national parks for purposes of wildlife protection and include:

i. The Mt. Elgon Forest National Park,
ii. Bwindi Impenetrable Forest National Park,
iii. Kibale Forest national Park,
iv. Mt. Rwenzori Forest National Park,
v. Mgahinga Forest National Park, and
vi. Semliki National Park.

b). Development of management plans for the major wildlife protected areas, with emphasis on community conservation strategies and benefit sharing.

5.6.1 Management of terrestrial biodiversity

There is no comprehensive policy in Uganda on the coordination of terrestrial biodiversity conservation and management. The current legal framework is centred on the protection of animal species identified as under special risk, and areas identified as important habitants for a wide range of wildlife. This strategy is consistent with the conservation of wildlife as a natural heritage, and as a resource of economic value. The increasing demand for more arable land has contributed to the demise of wildlife, especially outside National Parks (NPs) The situation has been aggravated by the total absence of public participation in the management of the resource. However, it is expected that the Biodiversity Action Plan currently under preparation will define a framework for management of biodiversity resources outside protected areas.

5.7 Role of Non-government organizations (NGOs) in environment management

NGOs and CBOs play a pivotal role in mobilizing and sensitizing local communities and supporting their active participation in natural resources management. This is largely due to their direct access to the beneficiary communities.

It is evident, that Government has undertaken a number of deliberate measures to address the problems of environmental degradation in the country through policies, legislations and actual intervention programmes under relevant ministries and agencies. However, due to insufficient resources, among other factors, it has become increasingly difficult for the government to undertake all necessary environmental management activities alone.

In response to these limitations, a number of NGOs have evolved to complement government effort to ensure sustainable utilization and management of natural resources as well as accelerate socio-economic development.

Broadly, NGOs play the following key roles in natural resources management:

- Organizing and mobilizing members of the community to agree on common goals, objectives and targets for solving their own environmental problems;

- Conducting training for the community and giving them skills to solve the existing environmental problems;

- Liaising with extension officers and other change agents and inviting them to assist in training the communities;

- Setting up demonstration centres where they can teach the community practically. These can

include agro-forestry plots, sample energy saving stoves and hearths, rabbit rearing, organic farming and contour bands on hillsides.

- Championing advocacy of sound environmental practices and management.

CHAPTER 6 MAJOR ENVIRONMENT ISSUES IN UGANDA.

Uganda today experiences a number of environmental problems which can be attributed to certain direct human activities. The following, however, are the issues of direct relevance to the concerns associated with the Nile basin:

6.1 Land degradation

6.1.1 Soil Degradation.

Soil degradation is becoming more pronounced particularly in the highland areas. This is manifested through soil erosion leading to siltation of water bodies as well as lowering of agricultural productivity. This soil degradation is a result of the following, among others;

- Poor farming methods and practices such as cultivating up and down hill,

- Deforestation which leaves the soil without any protective cover. This exposes the soils to erosion especially given the increased water run-off,

- encroachment into marginal lands including lake shores and river banks, thereby exposing the water bodies to impacts of land-based activities.

Specific "hot spots of soil degradation include the highland areas of Mountains Elgon and Rwenzori and the highlands of south western Uganda where intensive cultivation on hillslopes without adequate soil conservation measures is contributing to significant soil degradation.

6.1.2 Deforestation

Deforestation is widespread in the country. By 1890 Uganda was estimated to have forest and woodland cover of up-to 45% of its land surface. Uganda today has 21% of its land covered by forests including woodlands. Of this, 7.7 is gazetted forest reserves out of which 3.0% consists of tropical high forests.

This rapid loss of Uganda's forest cover is a result of:

(a) High woodfuel demand for cooking, brick making and the mining industry, especially lime production. Approximately 96% of the total quantity of energy consumed in the

country is provided by woody biomass, mostly for fuelwood.

(b) Encroachment into forests for agriculture. Because of the high population growth, the required increase in agricultural production has overwhelmingly been met by expansion of agricultural land. This has meant loss of vegetation cover with its attendant effects such as siltation of water bodies.

(c) Uncontrolled pitsawying, accompanied with inefficient timber use methods have also led to high rates of deforestation.

(d) Lack of clear management guidelines and protection of forest resources outside gazetted forest reserves.

6.1.3 Loss of terrestrial biodiversity.

Uganda is increasingly undergoing genetic erosion and loss of species due to degradation of the major terrestrial habitats and ecosystems such as forests and woodlands, wetlands and other ecosystems. In the south-western region of Uganda for example, the large-scale and wholesale conversion of wetlands into farmlands has led to near elimination of wetland species and habitats, while widespread encroachment into forests threatens the survival of species some of which are endemic to these forests.

Major issues regarding terrestrial biodiversity include:

- Lack of policy on management of terrestrial biodiversity outside Protected Areas,

- Inadequate community participation in the management of the resources,

- Lack of alternative and less destructive resource use strategies which reduce demand for biodiversity products,

- Encroachment into protected areas by human settlements. A survey on protected areas carried out in 1995/96 by the Ministry of Tourism, Wildlife and Antiquities revealed that over 60,000 people were by then settled within the "protected areas" and that in many parks and reserves wildlife populations had been severely degraded by poaching as can be reflected by the table below.

Table 3. Changes in population of selected large mammal species in Uganda from the 1960s until the mid-1990s.

Species	Period			
	1960s	**1982/3**	**1995-8**	**Status in Uganda**
Elephant	30,000	2,000	1,900	Population low but stable
Black Rhino	400	150?	0	Extinct in Uganda
White Rhino	300	20?	0	Extinct in Uganda
Burchell's Zebra	10,000	5,500	3,200	Population declining
Hippopotamus	26,000	13,000	4,500	Population declining
Rothschild's giraffe	2,500	350	200	Population low but stable
Buffalo	60,000	25,000	18,000	Population declining
Hertebeest	25,000	18,000	2,600	Population declining
Topi	15,000	6,000	600	Population decreasing
Impala	12,000	12,000	2,000	Population decreasing
Waterbuck	10,000	8,000	3,500	Population stable
Uganda Kob	70,000	40,000	30,000	Population stable
Bright's gazelle	1,800	1,400	100	Very rare, precarious
Roan	700	300	8	Very rare, precarious
Oryx	2,000	200	0	Extinct in Uganda
Eland	4,500	1,500	500	Population declining
Berby's eland	300	?	0	Extinct in Uganda

Source: Draft Wildife Protected Area System Plan for Uganda.

6.2 Environmental issues on water resources in the Nile Basin

In the Uganda Water Action Plan, water resources management issues are categorized into two, namely:

i"impact issues" which derive from human activities which negatively impact on the water resources with regard to quality and quantity, and

ii. "user requirement issues' which derive from an inadequate matching of user requirements (demand) against available water resources (supply).

In general, water quality and existing pollution loads in the region are not being monitored sufficiently to make adequate assessment of existing water quality. It is also apparent that the most striking international issue at present is the dramatic deterioration of water quality and ecology of Lake Victoria which in turn has affected the quality of water in the Nile. Another problem has been the invasion by water weeds, including water hyacinth.

An identification of the main issues concerning water resources management by the National Environment Action Plan (Issues Paper on Wetlands, Water Resources, Fisheries, Aquatic biodiversity and irrigated agriculture), included the following as being among the major issues of concern:

- limited availability of water (quantity) due to the uneven distribution of rainfall, surface and ground water reserves in the country,

- decline in water quality arising from pollution due to untreated industrial wastes, poor land management, improper sanitation, wastes from marine transport services, infestation with water hyacinth and other pests,

- lack of a comprehensive policy for integrated water resources management,

- absence of effective water resources assessment and monitoring systems,

- lack of community awareness and participation in sustainable water resources management, and

- inadequate regional co-operation in the management of shared water bodies (lakes and rivers).

6.2.1 Pollution of water bodies

Pollution of the water bodies is of growing concern as a result of harmful land-use practices along the lake shores and river banks. In recent years, the quality of water in Lake Victoria and River Nile has deteriorated considerably due to increased inflow of agricultural run-off,

industrial discharge of untreated effluents and partially treated sewage from an increasing urban population.

6.2.1.1 Pollution due to siltation and nutrient enrichment

Poor land-use practices along shorelines, including cultivation down to stream banks and lake shores and encroachment into wetlands have contributed to water quality deterioration through increased run-off, soil erosion and siltation of water bodies. Soil erosion also contributes to nutrient loading resulting from agricultural run-of from the catchment areas, thus causing eutrophication.

Within Lake Victoria, accelerated eutrophication of the lake has become a problem, and anoxic conditions (oxygen depletion) are experienced in some areas, as manifested by occasional fish kills in such areas.

6.2.1.2 Pollution due to discharge of un-treated industrial effluents

Industrialization in the Nile basin is increasingly contributing to water pollution problems due to direct discharge into water bodies of untreated industrial effluent from breweries, textile, sugar, leather tanning, mining and other industries. Of greater interest in this sector is the fact that most of the industries in Uganda are located in the Lake Victoria basin, at the shores at Kampala, Jinja and Njeru, and some of these industries have no effluent treatment facilities and thus discharge untreated effluent into the surface waters, thus affecting water quality and creating severe local effects on the receiving water bodies. The industrial wastewater contains wastes such as caustic soda, oils, barley and yeast fragments which have a direct effect to pH Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) of the water.

For example, in Jinja alone, Lake Victoria is surrounded by many industries some of which discharge untreated effluent directly into the Nile or Lake Victoria. Examples of these include:

-Gomba fishing industry for fish filleting,
-Agro-Marine Industries for fish processing,
-Leather and tanning Industry for processing of raw hides into blue hides,
-NAFCO Fishing Industry for fish processing,
-MULCO textiles (currently not in operation),
-PAPCO industries manufacturing paper and soft boards,
-PICFARE industries for textiles production,
-Gulu Foam industries and Vita Foam for manufacture of foam mattresses, cushions and pillows, and
-Nile Breweries Ltd. for beer production.

6.2.1.3 Pollution due to sewage and waste disposal and in-stream water uses.

Improper sewage and waste disposal, including municipal sewage is increasingly undermining water quality in the Nile basin. Most of the streams flow through densely populated residential areas with poor sanitary facilities, and domestic wastes are discharged directly into them. As a result, heavy pollution from raw sewage and other domestic refuse is evident, particularly in the streams traversing densely populated sub-urban residential areas. Extrapolation of present trends predicts an even more dramatic future change due to increasing population in the catchment area and the reduced buffer capacities of the protective ecosystems.

Direct in-stream water contamination is also rampant through several activities, including direct contamination by household chemicals associated with in-stream washing, watering of stock, and direct discharge of domestic wastes and raw sewage into water bodies, as well as through inland water transport systems. This can lead to organic enrichment and contamination of water with pathogenic bacteria.

6.2.2 Infestation by water hyacinth

Water hyacinth infestation both in Lake Victoria and River Nile continues to be a problem requiring concerted control efforts. In the recent past, the rapid spread of the water hyacinth has become a serious environmental problem in the lake, causing a lot of problems to fishing, water quality, water transport, power generation and to the economic activities of the riparian communities.

6.2.3 Degradation of aquatic biodiversity

The main issues with regard to aquatic biodiversity conservation include:

- Inadequate appreciation of the concept of aquatic biodiversity apart from fisheries. Although sometimes aware of biodiversity values, communities have little awareness of wider biodiversity issues and linkages with socio-economic use of resources.

- Invasion of the water resources by the water hyacinth.

6.2.4 Wetland Degradation

Wetland ecosystems in Uganda have been degraded by, among others;

- Extensive drainage and reclamation of wetlands for dairy farming and crop cultivation, especially rice growing, leading to loss of habitat for wildlife and other wetland values,

- Extensive burning especially to renew pasture and for hunting,

- Extraction of clay for brick-making with efforts to restore degraded sites,

- Excessive harvesting of wetland products such as papyrus and other crafts materials,

- Pollution from sewage, industries, garbage dumping especially in and around Kampala.

- Conversion for industrial developments in the urban centres.

Other specific issues on wetlands resources include:

- Lack of clear sustainable management guidelines for wetlands use and management,

- Land tenure, especially with the coming into force of the new Land Act where some people perceive wetlands as "their land".

- dumping of industrial and other wastes into wetlands

6.3 Environmental issues in the urban environment.

Urbanization and development, and the associated population growth, infrastructure and service demands often result in corresponding demand and pressure on the environment, resulting in deterioration in environmental conditions. As focal points for population growth, commercial and industrial activity, urban areas concentrate energy and resource use as well as waste generation, often to the extent that the environment is overloaded and over-stressed, while the capacity to manage it is overwhelmed. As a result, municipalities have become "environmental hot spots" that urgently require special attention as far as environmental planning and management are concerned.

Among the most pressing and challenging environmental problems in the urban centres are the problems associated with management of solid wastes, sewage, sanitation and natural resources conservation. These problems not only cause poor environmental conditions, but also threaten the health and quality of life of the urban dwellers.

Poor sanitary conditions are attributable to, among other factors, lack of maintenance of facilities by the appropriate agencies and, poverty among residents who cannot afford to pay for water, sewage and sanitation services. Problems of sanitation are further aggravated by the ever deteriorating drainage systems, poor waste disposal methods and grossly inadequate infrastructural services in the peri-urban settlements. There is also the problem of inadequacy of sewage and sanitation facilities that cannot cope with the ever increasing urban population.

6.3.1 Urbanization and impacts on water resources and wetlands

Based on the 1991 Census and projections, Uganda's population is currently estimated at over 20.0 million with a growth rate of 2.5% with an urbanisation rate of 14.4%

Urbanization has numerous impacts on water resources, both surface and ground water. The major urban centres in Uganda, notably Jinja, Entebbe and Kampala rely heavily on the waters of Lake Victoria and the River Nile for transportation, fishing and for domestic and industrial use.

These major urban centres also occupy an important location relative to Lake Victoria and the Nile which implies inherent environmental problems as most developments, including industries are located along the River Nile.

In Jinja and Kampala for example, water quality deterioration has been associated with drainage of wetlands and direct discharge of effluents and urban run-off into the water bodies.

6.4 Issues of disaster nature that affect water resources.

Within the Nile basin, a number of disasters have occasionally contributed to localised impacts on water resources. Such disaster situations with relevance to the Nile basin include the following:

6.4.1 Navigation risks

There have been incidents of boats capsizing in Lake Victoria but for which there are no emergency measures to rescue the victims. Since 1999-2000 alone, at-least three serious accidents have occurred claiming several lives.

6.4.2 Oil spills

Oils spills have occasionally discharged large amounts of petroleum products into rivers and streams without any emergency measures in place to remediate the situation.

6.4.3 Floods

Recent incidents during the El-nino and the recent floods in Lake Kyoga led to catastrophic environmental conditions, including displacement of people, loss of property and increased incidences of Cholera. There was, however, no disaster preparedness to address the situation.

6.4.4 Problem of refugees.

In Uganda refugee problems have contributed to localised vegetation and land degradation especially in the border areas with Sudan and now the Democratic Republic of Congo.

6.5 Issues on environmental education and awareness

Uganda has already developed awareness strategies for both informal and formal environment education. Environmental education has also been integrated in the school curriculum through the Ministry of Education as well as in university curricular. Government has also established a National Environmental Information Centre (NEIC) under NEMA to co-ordinate data collection and dissemination of environment information.

In general, however, the following issues still need to be addressed:

- there is still low level of environmental education and public awareness, and this is contributing to continued environmental degradation.

- There is also need for dissemination of environment information to key stakeholders including local communities.

6.6 Environmental issues due to population pressure

Population increase is contributing to increased pressure on natural resources in the basin and has thus led to emergence of degradation "hot spots" where there is heavy localised degradation of water quality in the lake, from silt and nutrient loading, human waste, urban run-off, and effluent discharges from industrial activity. The increased demand on biomass energy due to increasing population has also led to increased land degradation and consequently to nutrient enrichment resulting from soil erosion which releases nitrogen and phosphorus held in the natural soil profile. From urban areas and lakeshore communities, the main sources of nutrients are human waste, especially from untreated sewage discharges.

Under the Poverty Eradication Action Plan, Government of Uganda recognises that the national stock of natural resources is under increasing threat of degradation and depletion due to increasing population growth as well as unsustainable resource utilisation. It is estimated that in 2018, Uganda will have a population of 36.4 million people. This increase in population is expected to create a corresponding massive impact on the natural resources base due to increased demand which is expected to outstrip the country's current and projected capacity to address the resulting environmental problems.

6.7 Sector/resource specific environmental issues relevant to the Nile basin

6.7.1 Environmental Issues in the agricultural sector

The potential impacts from agricultural activities on water quality and quantity include:

- Increased sediment loads into water bodies due to inappropriate agricultural practices such as overgrazing and wetland encroachment, leading to soil erosion and silting of water bodies, and water supply systems;

- changes in the hydrological regime due to potential interference with infiltration resulting into reduced ground water recharge. Soil erosion and land degradation are highly pronounced, particularly in the highland areas which are the more favoured for agriculture.

In addition to physical obstruction of water bodies, sediments are rich in nutrients and therefore encourage eutrophication.

Related effects of agricultural activities on water resources include transport of nutrients and agro-chemicals, resulting in pollution and eutrophication of surface waters.

6.7.2 Environmental issues in the mining sector

Mining activities, if not properly managed, can affect the quality of water resources through chemical pollutants such as toxic heavy metals, thus influencing possible water use for other sectors in the impacted areas. Other impacts on water resources from mining activities include:

- contamination by minerals of surface and/or ground waters due to process and drain water from mines,

- weathering/leaching of dumped or stocked by-products and wastes.

- The mining sector also utilizes vast quantities of water in processing of ores, and the resultant discharged process water may be chemically altered due to high concentrations of chemicals, including strong acids, resulting in pH changes in the receiving water bodies.

Although at the moment the effects of mining activities may appear low and thus pose limited threat to the general quality of the country's surface or ground waters at a national level, localized problems have already been experienced in some parts of the country, such as is the case with the former copper mining and processing activities in Kasese.

With the current drive to encourage investors to rehabilitate the former abandoned mining activities, and with the likely increase in investment in this sector, there is need to ensure that

these activities do not lead to contamination of the country's water resources.

6.7.3 Issues in the energy sector

The main issues in the energy sector include:

- Slow rate of adoption of alternative energy sources such as solar energy technologies and biogas despite the high potential for harvesting as well as producing electricity in areas located far from the national electric power grid. In addition the prevailing widespread poverty especially among rural communities implies that they cannot afford the high initial costs of other energy sources such as photo-voltaic equipment.

- insufficient hydro-electric power,
- slow development of rural electrification,

- High dependence on and demand/consumption of biomass energy leading to widespread degradation, and

- high cost of petroleum products.

6.7.4 Issues on land use

- No national land-use development plan leading to haphazard land-use.

6.8 Cross-cutting environmental issues

Cross sectoral environmental issues within the Nile basin include, among others:

- Public health and incidence of water-borne diseases as it relates to widespread pollution and poor sanitation,

- deforestation and decline of tree cover as it relates to energy-environment linkages, associated with the more intensive use of biomass energy. The loss of tree cover and vegetation can cause serious negative environmental consequences, including loss of wildlife habitat, micro-climatic changes, air quality and related health problems,

- lack of adequate financial resources at various levels as it relates to the capacity to provide environmentally sound energy alternatives thus leading to over-exploitation of biomass energy sources thereby causing land degradation,

- Poverty as it undermines the ability to institute sound environmental management programmes,

- need to create environmental awareness as it relates to establishment of sound and integrated resource management programmes, and

- Infestation of the water bodies by water hyacinth which is likely to cause further deterioration of water quality, decline in aquatic biodiversity such as fish, and interference with transportation and socio-economic activities in the water bodies of the Nile basin.

- Continued phenomena of global warming and climate change which have severe impact on water resources and associated natural resources.

6.9 Underlying Causes of Environmental Degradation

The following are the underlying factors that have caused environment degradation in Uganda.

- The conversion of forested lands into farmlands has been the principal contributing factor to loss of vegetation cover.

- The heavy reliance on biomass energy is another major contributor to land degradation.

- There is inadequate understanding of the links between the various land-based activities and the state the aquatic environment, and little consideration is given to ensuring sound land-use practices as a result.

- Poverty has also contribute significantly to natural resources degradation as many people are forced to depend on natural resources exploitation for survival, thus causing environmental degradation problems.

- Low levels of environmental awareness implies that people are not able adequately perceive the linkages between resource exploitation and degradation.

- It is also argued that population increase is contributing significantly to increased pressure on natural resources, including ecosystems buffering water ecosystems.

- Limited community participation and involvement in resource management has also undermined the level to which the various conservation policies and laws have been implemented and enforced, hence the continued degradation of these resources by development activities.

CHAPTER 7: RECENT, CURRENT AND PLANNED INITIATIVES

The account below presents some of the key projects that are ongoing, or are yet to be funded in the environmental sub-sector and are of direct relevance to the protection and management of the Nile basin environment:

7.1 Strengthening of Water Resources Monitoring and Assessment Services Project

Currently the technical capacity for surface water and effluent monitoring at DWD is being strengthened through the DANIDA funded "Strengthening of Water Resources Monitoring and Assessment Services Project". Through this project, modern laboratory facility at the DWD Water Resources Department in Entebbe has been established to facilitate regular water quality monitoring programmes to provide the necessary baseline conditions for Uganda's water resources.

7.2 Environment Management Capacity Building Project (EMCBP) funded by World Bank for:

The EMCBP is a project aimed at building capacity for environmental management at National, district and community levels through the establishment of the National Environment Management Authority (NEMA) and the horizontal linkages with Ministries, and the strengthening of selected (7) districts (oriented toward support for the community components) and the establishment of environment management structures at the district and local levels.

The project also supports the public awareness, education and training component, pollution control systems with attendant establishment of Environment management tools such as EIA guidelines and Regulations, Environment audit guidelines an environmental standards.

Through this project, the process for community participation in environment management to address natural resource degradation problems of local concern has been enhanced.

7.3 The project providing financial support for inventory on anthropogenic sources and sinks of Green house gases was supported by the United Nations Environment Programme (UNEP) and Global Environment Facility (GEF)

7.4 Lake Victoria Environment Management Programme (LVEMP)

The LVEMP, funded by UNDP and the World Bank has the objective of strengthening fisheries management and controlling the water hyacinth and improving upon management of water quality and land use in Lake Victoria and its catchment.

The GEF/IDA funded Lake Victoria Environment Management Project, also includes a large water quality management component under which the general water quality of the lake will be monitored, and will thus be a good source of baseline data for water resources monitoring.

The LVMEP is a comprehensive environmental development programme that is regional in coverage and includes management of the lake itself and the drainage basin. The project was conceived in 1992 under a tripartite agreement signed on 5th August 1994 by the three East African countries, Uganda, Kenya and Tanzania.

The project activities are grouped into ten closely related major components that have among them 30 areas of emphasis being implemented within ten different institutions due to the project's multi-disciplinary and multi-sectoral nature. Regional and national co-ordinating mechanisms are in place to ensure timely and quality implementation of the various components of the project. Under this project, the following tasks are currently being implemented through the various lead agencies located within government ministries:

- Catchment afforestation component targeting tree planting and production of seedlings as well as the conservation of natural forest reserves, with involvement of local communities, with aim of increasing tree cover to arrest soil erosion.

- Land-use management, with community participation, emphasising soil and water conservation to reduce pollution loading and improve agricultural production.

- Management of wetlands, emphasising sustainable use of existing wetlands with a view to maintain and protect the buffering capacity of wetlands fringing the lake.

- Industrial and municipal waste management, emphasising rehabilitation of existing waste treatment facilities, demonstrating the use of artificial or natural wetlands in waste treatment and the installation and use of waste treatment plants by all stakeholders within the lake basin,

- The water hyacinth control component emphasizing the removal of the weed in order to stem its continued multiplication and distribution in the lake ecosystem.

- The water quality monitoring component to continuously monitor the level of pollution, including eutrophication, sedimentation and the pattern of inflow dispersal in the lake.

- The fisheries research component to generate information on fish biology and ecology, their stock sizes, socio-economic characteristics of the fishery as well as establishment of a comprehensive fishery database.

- Capacity building at all levels including provision of support to riparian and collaborating research and university institutions.

Other components include:

- Component on facilitation of the Lake Victoria Fisheries Organisation, and

- a component on strengthening fisheries management, extension services, enhanced law enforcement and data collection as well as financing community demand driven micro-projects to enhance the welfare of riparian communities.

Of particular interest to the Nile Basin Initiative is the fact that the LVEMP is already achieving some outputs that compliment the expected goals of the NBI. Some of the outputs already being achieved under the LVEMP include:

- Locating and quantifying environmental problems arising from the very rapid growth of population around the shores of the lake and its catchment,

- Identifying the sources of pollution and nutrient inflows into the lake,

- Beginning to implement ameliorative measures including innovative pilot measures, and

- Providing stakeholders at all levels with the necessary skills, information, technical and financial resources to carry out the various initiatives within the Lake Victoria ecosystem as a whole.

7.4.1 Ongoing initiatives on water hyacinth control

A programme to control the water hyacinth is underway co-ordinated by the Water Hyacinth Unit under the Department of Fisheries in collaboration with other institutions.

7.5 Development Through Conservation Project.

This integrated conservation and development project aims at conserving the Bwindi impenetrable Forest and Mgahinga National Parks while at the same time seeking to improve the natural resources-based economy of farm families in the surrounding areas. The project, funded by USAID and targeting 7,500 farmers in 24 parishes, is under the Ministry of Tourism, trade and Industry, and was designed to, among other things:

- provide water,

- establish environmental Committees and Forest Societies, and

- strengthen agricultural extension sources to improve farm productivity and soil conservation.

7.6 The National Wetlands Conservation and Management Programme.

Because of the continued threat and pressure on wetland resources, Government of Uganda, in 1989, set up a national Wetlands Conservation and Management Programme with the aim of sustaining the biological and socio-economic values of wetlands through strengthening the national and district capacity for wetland conservation and management and to develop methodologies for sustainable wetland resource use and management.

With financial support from the Royal Netherlands Government and NORAD, and Technical Assistance from IUCN, the project is implemented by the Wetlands Programme in the Ministry of Water, Lands and Environment. The current third phase of the project is expected to end in the year 2001.

7.7 The East African Cross - Border Biodiversity Project

The East African Cross – Border Biodiversity Project is a 5 year project (1998-2003) funded by the Global Environment Facility (GEF), a multi-national trust fund mechanism which supports globally significant environment activities world-wide. The project is designed to undertake activities aimed at reducing biodiversity loss at selected cross-border sites in the three East African countries: Kenya, Tanzania and Uganda. The Project is a response to the concern raised by the fact that, although the sites are already gazetted as Forest Reserves, the resources found in them are being depleted at increasing rates. The search for more farmland leads to Forest Reserves being encroached upon and biodiversity is lost by over harvesting of key resources.

The overall objective of the project is to reduce the rate of loss of forest and wetland biodiversity in specific cross border sites of national and global significance. The project seeks to achieve this through strengthening conservation capability of districts and communities and establishing alternative resource options and management strategies so as to reduce the rate of loss of forest and wetland biodiversity at the border ecosystems of Rakai/Mbarara and Moroto/Kotido. The project supports district level planning and decision making to conserve biodiversity, and to develop management plans for the ecosystems. This project is also expected to provide useful lessons on management of cross border ecosystems.

7.8 The Kibale - Semliki Forest Conservation and Development Project

This project aims at biodiversity conservation and development of appropriate land-use strategies for the areas around Semliki and Kibale Forests which are endowed with unique flora and fauna of both national and international importance. The project, funded by the Netherlands Government through IUCN, aims to:

- strengthen the capacity of Uganda Wildlife Authority,
- establish Local Environment Committees, and
- Develop income generating activities for surrounding civil society.

The project activities include forest resource planning and management, environmental education and extension and sustainable development, and covers the districts of Bundibugyo, Kabarole and Kasese which are bordering the National Parks of Semliki and Kibale forest and are also within the western Uganda Nile basin catchment.

7.9 Initiatives in the energy sector

To activate the development of the solar energy sector, a number of programmes are being pursued, including:

- The Ministry of Energy and Mineral Development has embarked on a pilot project, namely, the Photovoltaic Pilot Project for Rural Electrification (UPPPRE) whose goal is to develop a sustainable market for solar photo-voltaic (PV) technology, concentrating on addressing the various constraints related to marketing and use of PVs and targeting areas far from the hydro-power grid. The project targets to electrify at-least 2000 households and several community facilities.

- Uganda is also engaged in the development of hydro-power potential, with a number of projects already approved for implementation. These include, among others, the 250 MW power project at Bujagali, and the 150 MW project at Karuma.

Other planned projects

7.10 The Environment Sector Programme

In July 1999, the National Environment Management Authority, in partnership with other sectoral departments responsible for management of sectoral natural resources, developed an Environment Sector Programme (ESP) to be presented to the Government for implementation. The programme, has, however, not yet obtained the required funding.

The ESP focuses at the household as the basic and most important unit to target for sustainable utilisation of natural resources. The ESP targets the household and the involvement of all stakeholders through building partnerships with districts, Government departments, NGOs, the private sector and line ministries, and NEMA. Some of the key activities identified for implementation under the Environment Sector Programme include, among others:

- sensitization of communities on the benefits of sustainable natural resource management through public awareness campaigns,

- enhancing the role of Sectoral Lead Agencies in integrating environental concerns in sectoral programmes,

- integrating environmental concerns into agricultural extension services,

- intensifying afforestation programmes through promotion of small and large scale commercial agroforestry,

- Restoration of degraded wetlands and protection of those not degraded,

- Enhancing the capacity at both national and district level for environmental planning, implementation and monitoring,

- Developing appropriate environmental laws and efficient mechanisms for their enforcement,

- Formulating and implementing strategies for conservation of biological diversity,

- Developing pollution control mechanisms, and

- Establishing and implementing a waste management policy particularly in urban areas.

7.11 The South West/South East Integrated Watershed Management Project

Though not yet operational, this project, with financing expected from the African Development Bank, is to be implemented by the Forest Department. The project objectives include:

- halting the environmental degradation and loss of biodiversity due to deforestation and soil erosion,

- Increasing environmentally sound agriculture and forestry production,

- Increasing employment through management of project developed forests.

7.12 Development Through Conservation Project

The objective of this project, implemented by the Ministry of Tourism, Trade and Industry and financed by USAID (through CARE International) is to contribute to the conservation of the Bwindi Impenetrable forest and Mgahinga National Parks and to improve the natural resource based economic security of farm families in the surrounding farmlands. Through this project, it is expected that the following will be achieved:

- natural resource management capabilities of the local communities will be improved,

- farmers knowledge, attitudes and practices to natural conservation will be changed, and

- productivity of farms and forests will be improved.

The project seeks to achieve this by, among others, addressing problems such as illegal activities within forests reserves, setting up community-based Forest Societies and establishing Environment and production Committees in the project area.

7.13 The Lake Victoria Development Programme.

This programme is a new initiative by the Swedish Government and it is aimed at assisting the East African Co-operation (EAC) states (Uganda, Kenya and Tanzania) to develop a comprehensive strategy and framework for sustainable development in the Lake Victoria region.

The time frame for the Swedish Government engagement in the lake Victoria region development is long term and a period of 20 years is envisaged. The strategy for the Lake Victoria Development Programme seeks to establish an institutional framework for effective co-ordination of all economic and social activities on and around Lake Victoria. The strategy will therefore seek to ensure harmony among the various ongoing as well as new development initiatives focusing on Lake Victoria and its catchment and involving other development partners and donor agencies. Key areas for facilitating and initiating activities envisaged under the strategic partnership between the EAC and the Swedish Government (and other partners who may join in due course) include:

- supporting processes on early political decisions on setting regional goals and initiating regional concerted actions,

- Developing regional policies related to basin development,

- Initiating studies aimed at increasing the understanding on environmental and socio-economic issues in the region (such as subsistence strategies, poverty and gender),

- Establishing and strengthening an information data base on the lake Victoria region and promoting the exchange of information,

- Promoting and supporting capacity building at strategic levels in the region, including the regional networks;

- Initiating and supporting the process of harmonising relevant laws, regulations and standards,

- Initiating processes on developing action and investment plans, and

- Initiating and facilitating the establishment of co-ordination mechanisms on the Lake Victoria management and development.

7.14 UNEP/UNDP/DUTCH Joint project on Environmental law and institutions in Africa - East Africa Sub-regional project.

The UNEP/UNDP Joint Project on Environmental Law and Institutions in Africa, funded by the Royal Netherlands Government aims at assisting selected African countries, to develop their capacities in environmental law. Uganda, Kenya and Tanzania are implementing a joint sub-regional East Africa Programme. The objective of the project involves assisting participating countries in developing legal framework for environmental management and supporting on-going efforts in the field of environmental law reform. In Uganda the project is implemented by the National Environment Management Authority. This was in response to a realisation that despite the fact that the environmental management sector was developing, the legal component was not developing at the same pace. The project has received US $ 5 Million from the Dutch Government.

Under this project, a memorandum of Understanding has been signed between the three East African States on cooperation on environment management, and whose specific objectives include, among others:

- to establish interim arrangements for continued consultations, capacity building and networking on environmental policies, laws and strategies,

- to undertake joint programmes and activities including information sharing and harmonisation of relevant environmental laws under the project,

- to provide a basis for the Partner States to co-operate with competent specialised organisations and other governments in the field of environment management, pending the adoption of a protocol under the East African Treaty, and

- to promote the development and implementation of environmentally sound principles, international agreements, instruments and strategies for environment and natural resources management among the partner states.

Specific areas identified for cooperation include under the MOU include development, harmonisation and enforcement of environmental legislation on the following key areas,

- Development and harmonisation of environmental standards,

- management of the lake Victoria ecosystem and other shared natural resources such as rivers and wetlands especially those significant as habitats of flora and fauna,

- Environmental Impact Assessment procedures,

- management of the Lake Victoria ecosystem,

- management of hazardous wastes and other wastes, including their transboundary movement,

- management of wildlife resources, including their transboundary movement,

- developing a mechanism for compliance with and enforcement of environmental policies, laws and strategies in the region,

- management of marine and coastal environment, including pollution control.

In Uganda the following activities, among others, have been carried out:

- Drafting and developing Environmental Impact Assessment Regulations which have been gazetted and are now law.

- Drafting Wastes and Hazardous Wastes Regulations which are now law.

- Preparation of a report of legal aspects for the management of Lake Victoria

- Preparation of Environmental Standards (soils) Regulations and drafting of the Forest Bill. The drafts are now undergoing a consultative process before approval.

In the planned phase II of the project, the following activities are proposed:

i. Continued support to implement the national Environment Statute through developing outstanding regulations and environmental, guidelines,

ii. developing a comprehensive system of enforcement and compliance with the law,

iii. building capacity at sub-national levels to comply with the law,and

iv. harmonisation of laws and policies on environment among the three East African countries.

Recent and ongoing studies relevant to the Nile basin Initiative

- Investigations on the role of wetlands as filters of pollutants have recently been concluded in the Kirinya wetland in Jinja through a PhD research programme being conducted under the National Water and Sewerage Corporation in collaboration with the International Institute for Hydraulic and Environmental Engineering (IHE), Delft.

Initiatives under Land-use

- A new Land Act has recently been promulgated in Uganda and addresses land tenure systems in Uganda.

- The National Biomass Project under the Forest Department has for the last four years been engaged in mapping and quantifying land cover and biomass (trees, bush, crop residues and other materials used for woodfuel) using remote sensing, field surveying and Geographical Information Systems (GIS) technology. The data generated is used to assess resources trends today and project 10-20 years into the future.

To-date the whole country has been mapped to a scale 1:50,000, using a combination of SPOT satellite imagery and extensive ground surveying.

Chapter 8 OPPORTUNITIES

8.1 Existence of an operational institutional framework for environment management in Uganda.

In order to address the environmental problems associated with the Nile basin, there exists opportunities in utilising the already existing and operational institutional framework that has been established for environment management in Uganda. These institutions can therefore play a role in various ways to ensure implementation of the identified priority actions. These institutions include, among others:

- Extension service from Ministry of Agriculture, Animal Industry and Fisheries,
- Forestry Department, for afforestation programmes,
- The Directorate of Water Development for enforcement of water related requirements,
- The National Environment Management Authority (NEMA),
- The National Wetlands Conservation and Management Programme
- District Environment Offices and District Environment Committees for initiatives at district level and sub-district level,
- NGOs, and
- Local Environment Committees for mobilisation of community actions required to address land and natural resources degradation.

8.2 Well established legal and policy framework

In Uganda laws on the environment and protection of water resources have been developed and are quite comprehensive. What remains, however, is their implementation and harmonisation with those of other riparian countries so that actions are harmonised and complement each other.

8.3 The East African Co-operation framework.

Within the east African region, initiatives for co-operation on issues such as natural resources management are already underway and this will provide a platform for further co-operation under the Nile basin Initiative, especially for implementation of identified actions at a sub-regional level.

Under the East African Co-operation, there are already ongoing programmes for management of water resources and whose experiences can be utilised by the NBI. These programmes include the LVEMP and the SIDA initiative currently under preliminary preparatory stages.

Chapter 9 STAKEHOLDER ANALYSIS AND CONSULTATION PROCESS

Description of stakeholder consultation process.

The stakeholder consultative process involved the following key elements:

A. The initial stages of the consultative process involved consultative visits to institutions with a stake in the Nile and/or with direct interest in the Nile basin and its resources. These visits were aimed at discussing with these institutions what they consider should be the issues to be included for consideration in the environment component of the Shared Vision Programme of the Nile Basin Initiative.

Institutions that were consulted included, among others:

National Level Institutions

1. Ministry of Water, Land and Environment, (including the Directorate of Water Development, the National Wetlands Programme, the GEF Biodiversity Conservation Project, Forestry Department).
2. Ministry of Energy and Mineral Development.
3. Ministry of Tourism Trade and Industry.
4. Ministry of Health.
5. Ministry of Agriculture, Animal Industry and Fisheries (including Agriculture and Fisheries Departments).
6. Ministry of Works, Transport and Communications.
7. Uganda Investment Authority.
8. Uganda Electricity Board.
9. Directorate of Energy.
10. Makerere University Institute of Environment and Natural Resources.

Local Authorities

11. Mukono District, including the District Environment Office of Mukono,
12. Jinja District, including the District Environment Office for Jinja.
13. Jinja Municipal Council.
14. Kampala City Council.

Selected NGOs: A number of NGOs with activities in the field of Environment and natural resources management were also identified as consultees. Some of these will include:

15. IUCN
16. Uganda Wildlife Society.
17. Uganda Women Tree Planting Movement
18. Masindi Small-scale Enterprises Ltd.
19. Environment Protection and Economic Development (EPED) Project.

B. After the institutional consultations were accomplished, a draft report was prepared and distributed to all the relevant institutions and agencies for their review and comment.

C. A workshop of all the stakeholders was convened on the 25th of February 2000 at the Grand Imperial Hotel, Kampala, to review the issues identified and to generate consensus on issues identified.

In order to broaden the scope of NGO participation at the planning and consultative stage, an NGO consultative meeting involving more NGOs was recommended as a follow-up to the national Consultative workshop. The NGO consultative meeting was subsequently held on the 29th of March 2000. The list of NGos that attended and a summary of the issues and recommendations that arose out of this meeting is included as Appendix 4 to this report.

D. The views arising from the workshop were then incorporated into the final national report for onward transmission to the Lead Consultant.

List of workshop Participants.

The list of the institutions and individuals invited to the workshop is attached to this report.

The final national report on the environment component was then submitted on March 20th 2000.

Summary table of the Inception report.

Activity	Time frame
1. Literature review	Starting fourth 1st week January
2. Consultations with key institutions	Starting second week January
3. Draft National Report	Fourth week January
4. Distribute Draft for stakeholder review	First week February for a two week review period
5. Finalise arrangement for national workshop.	2nd week February
6. Hold national consultative workshop	24th February
7. Convening of NGO consultative meeting	29th March 2000
8. Finalise draft report	4th week February to 2nd Week March
9. Submit Final draft National Report	17th March.

CHAPTER 10 PRIORITY ACTIONS

10.1 Required actions to address land degradation

10.1.1 Actions to control soil degradation

Whereas there is "a cry" that, the forests have been degraded largely for timber and woodfuel, the level of afforestation does not match the rate at which tree cover is being lost. The main challenge therefore is to increase the biomass resource base through intensification of afforestation campaigns. This means that, plans for massive afforestation need to be put in place through the Forest Department and also by the districts and other private sector players, including local communities. Other required actions include:

- Programmes to avail tree seedlings to communities in order to enhance tree planting programme in Nile Basin should be put in place.

- Awareness campaigns should also be stepped up to promote sound land-use and soil and water conservation practices.

10.1.2 Action to control deforestation

- Law enforcement to halt any further encroachment into forest reserves and marginal forest lands outside protected areas should be stepped up.

- Programmes to promote wood biomass end-use efficiency should be instituted so as to limit demand on existing biomass resources.

- Since agricultural expansion is one of the main reasons for deforestation in Uganda, extension services should be boosted to address issues such as cultivation within forest reserves and to provide advice on afforestation and agro-forestry.

- There is need for development of policies that seek to protect forest resources outside protected forest reserves.

10.1.3 Control of biodiversity loss

There is need to ensure that any further encroachment into protected areas, which are the only remaining pockets of biodiversity concentration is halted through increased law enforcement by the relevant agencies (ie; Wildlife authorities for wildlife protected areas and forestry authorities for forest reserves).

Alongside this, there is need for development of policies that seek to protect biodiversity resources outside protected areas.

10.2 Actions to control of water pollution and waste generation

10.2.1 Actions to control pollution due to siltation and nutrient enrichment of water bodies

- There is need for awareness campaigns to sensitize the Nile riparian communities on the impact and link between their land-use activities and the discharge of silt and nutrients into water bodies.

- Community-based land management programmes such as instituting sound agricultural and land-use practices should be encouraged through improving extension services.

10.2.2 Actions to control pollution due to discharge of untreated industrial effluents.

- With the increasing industrialization in the country, the potential of generation of pollutants and wastes is likely to increase. Because of water quality and health implications of this, enforcement of Standards on discharge of effluents into water and land needs to be strengthened to ensure sound waste management and disposal practices of the industries and other facilities which discharge untreated effluent.

Environmental audits should also be conducted for the existing industries to ensure that they pre-treat their effluents to acceptable standards before discharge into the water bodies.

- Industries need to adopt efficient and cleaner technologies designed to produce less waste and

pollutants into the environment.

- Environmental Impact Assessment should be instituted for all future projects to be set along the banks of rivers and lakes so that appropriate pollution control measures are identified before such projects are implemented.

- Inventory and control of pollution sources and nutrient inflows in the Nile basin catchment should be carried out in areas not covered under the LVEMP.

- There is need to harmonise and strengthen laws on pre-treatment of waste discharges throughout the Nile basin riparian countries. This will also call for harmonisation of laws and policies relevant to pollution control.

10.2.3 Actions to control pollution due to sewage and other in-stream pollution

- Awareness creation for sound management of sewage and its impact on the water bodies will be required if direct discharge of sewage into water bodies is to be controlled.

- Alongside this, development of sanitary infrastructure, particularly in municipalities would go along way to reduce direct sewage and organic loading into water bodies.

- Strengthening of community-based water resources management. For effective implementation of sound water management practices at community level, there will be need to strengthen the lower level community management systems to ensure closer monitoring of compliance to recommended actions to enhance community-based water source management and maintenance in line with decentralized management.

At the Local Government/district levels, there is need to empower the local communities to manage their water resources through developing capacity and awareness for regulation of water extraction, pollution control and monitoring of wastewater discharges. Such empowerment and capacity building could be developed within the broader framework of the overall environment management structures at the district and local levels, or any such existing institutional arrangement for water resources management.

10.3 Actions to control water hyacinth and other aquatic weeds

Maintenance control of the water hyacinth and other water weeds at national and regional level should be continued alongside the current initiatives under the Lake Victoria Environment Management Programme.

10.4 Actions to address degradation of wetlands and lake shore and river bank ecosystems

- Wetlands and other vegetation along lake shores and river banks should be left intact to safeguard the water resources against effects of soil erosion. In this regard, the enforcement of the new Regulations on Management of Lake Shores and River Banks should be taken as a priority. Designation of environmental protection zones along the shorelines to prevent the destruction of the protective ground cover and shoreline wetlands should be considered.

- Uganda needs to develop a national land-use policy and soils policy, which should among others, clearly spell out measures for protection of the marginal lake shore and riverine ecosystems.

- In the absence of a land-use policy, there is need to regulate land-use activities at the edges of water bodies (streams, rivers and lakes) in order to minimize risk of direct impact on such water sources. This should include enforcement of Regulations on Wetlands, River banks and lake Shores.

10.5 Actions required to address natural disasters

- There is need to put in place emergency response mechanisms and measures to address the problems associated with the increasing incidences of disasters, notably navigation accidents, oil spills, floods problems and refugee problems.

- On the refugee question, and in order to minimise land degradation problems associated resettlement of displaced people, initial environmental studies should be carried out to identify suitability of candidate resettlement areas to support refugees.

10.6 Actions to create environmental awareness

It is generally recognised that there is general limited awareness on the responsibilities of various stakeholders in management of environment and natural resources. Furthermore, environment laws are new and some leaders at district and local levels are not even aware of them. It then becomes difficult to expect them to enforce what they themselves do not know. Environmental awareness programmes should therefore be instituted to sensitize local communities on the value of sound environmental and natural resources management.

Sensitisation of the stakeholders in the district and community level on their mandates, policies and legislations governing natural resource management is therefore a prerequisite if the districts and communities are to fully participate and ensure sustainable management of natural resources in the Nile basin. Seminars and sensitisation workshops should be organised at all levels in the riparian districts (LCI-V) to create awareness on mandates, policies and legislations governing natural resource management.

This awareness should include the development of understanding of the links between land-based activities and water quality concerns.

10.7 Required Actions to address natural resources degradation

In line with the concept of sustainable development, future developments along the Nile basin should recognize the importance of natural resources conservation as a basis for assuring a healthy environment for all riparians. Measures to stop further degradation of water bodies, wetlands, forests, green areas and other important resources in the basin should be built into the overall planning and development process.

10.7.1 Actions required to address water resources concerns

Because effective management of water resources requires up-to-date data on baseline conditions, there is need to strengthen the capacity of the Directorate of Water Development (DWD) to undertake detailed water balance studies and water resources assessment and monitoring, including both quality and quantity, evaporation and ground water recharge processes, as well as evaluation of the effects of land-use activities on water resources.

Such monitoring and assessment services require:

- a well functioning monitoring network supplying technical information on the surface and ground water resources,

- operational and reliable laboratories for analyzing water samples to provide information on water quality.

Uganda maintained and successfully operated a good hydrological services department until the late 1970s when the onset of civil unrest led to destruction of the gauging stations. There is therefore need to rehabilitate these so that the national monitoring and assessment services continuously deliver updated information about the state of the nations water resources, thereby forming the necessary basis for sound water resources development and management, taking into account requirements of the various sector developments as well as protection of the environment.

10.8 Harmonisation of Legislation in the riparian countries.

Because the Nile basin Countries are at different levels with regard to enacting environmental legislation and policies, there will be need to harmonise the policies and laws in the area of natural resources management if common strategies for environment management are to be effected.

Such harmonisation should spell out common strategies to be applied throughout the basin, as well as mechanisms and strategies for achieving the desired Shared Vision Programme conservation goals.

A strategy that seeks to develop standardized bye-laws across the riparian countries for management of specific common cross-border environmental problems should be put in place and enforced to regulate various aspects of environmental degradation currently being

experienced in the Nile basin. For example, development of soil conservation bye-laws at the district levels, especially those within the Nile basin catchment could be replicated in the basin.

10.8.1 Need for regional planning

There is need to draw comprehensive regional legislations and management plans for the ecosystems by the Nile basin states on the management of natural resources and cross border environmental concerns. For example, whereas Uganda has enacted a policy for the management of wetlands, other riparian countries such as Rwanda and Tanzania do not have such policy and this creates a major challenge in applying common management strategies for such resources in a basin-wide context.

10.9 Diversification of sources of income

Diversification of income generating activities especially in communities neighbouring to the Nile and its catchment is a strategy that ought to be adopted. This will reduce communities' dependence on natural resources such as forest ecosystems for their livelihoods. Activities such as eco-tourism, crafts production etc should be initiated by communities. Some of these will serve as incentives towards community participation in conservation of natural resources in the basin.

10.10 NGO involvement

Involvement of NGO's and other stakeholders in the planning process in natural resource management is a sound strategy which ensures that there is no duplication of roles and wastage of resources.

The involvement of Non Governmental Organizations, Community-based Associations, independent institutions and individuals who have already put in place programmes to address the environmental issues should be encouraged through enhanced support to these organizations and communities.

10.11 Enforcement of existing laws and Regulations

In view of the continued degradation of natural resources, there is need to step up enforcement of existing laws and policies relevant to the Nile basin environmental management. Such enforcement should target the following, among others:

- Enforcement of the requirements for industrialists to meet effluent discharge standards through pre-treatment of industrial wastes in order to reduce the discharge of nutrients and pollutants into the water ecosystems.

- Addressing the environmental "hot spots" under the various issues as identified under Chapter 6 of this report.

Table 1: National Laws and Regulations related to Nile Environment and Resources in Uganda

Law, Ordinance, Regulation	Year (in force)	Government Agency Concerned
The Constitution of the Republic of Uganda.	1995	All
The National Environment Statute.	19th May 1995	NEMA
The Water Statute	22nd December 1995	DWD
The Forest Act.	1964	Forestry Department
The Land Act.	1998	Ministry of Water, Lands and Environment.
The Water (Waste Discharge) Regulations	21st August 1998	DWD
The Water Resources Regulations	21st August 1998	DWD
The National Environment Regulations on Wetlands, Lake shores and River banks.	21st January 2000	NEMA/Wetlands Programme
The National Environment Standards for discharge of effluent into water or land.	12th February 1999	NEMA
The Environment Impact Assessment Regulations	12th February 1999	NEMA
The Factories Act	1964	Department of Occupational Safety and Health, Ministry of Gender, Labour and Social Development.
The Public Health Act	1964	Ministry of Industry and department of Labour
The National Environment (Hilly and Mountaneous Areas Management Regulations	21st January 2000	NEMA
The National Environment (Waste Management) Regulations	3rd December 1999	NEMA

Table 2. Protected Areas of Uganda.

Protected area	Size (Km^2)	Year declared	Major habitats and significant species	Impacts and conflicts	Manage-ment	Global recognition
Mt Elgon N.P	1,192	1993	Highland water catchment, Unique high altitude forest/savanna mosaic.	Large mammal populations drastically reduced by hunting. Intensive land demands by surrounding communities	Uganda Wildlife Authority (UWA)	Unique importance for conservation due to high number of restricted-range species of trees and shrubs. Important water catchment.
Murchison Falls N.P	3,850	1954	Site of International importance with high diversity of large mammals, high diversity of bird species.	Poaching in northern area of park, Fishing activities too close to park boundary	UWA.	Site of international Importance (category B).
Queen Elizabeth NP.	1,978	1952	Very high diversity of large mammals and birds	Twelve fishing villages in park with approx. 15,000 people, Poaching.	UWA.	Ramsar site within park boundaries.
Semliki NP	214	1993		Intensive agriculture to edge of park.	UWA	Of regional importance for conservation, Human settlement of an ethnic minority (the Batwa) permitted inside park.
Kibale NP	740	1993	Diverse primates and birds.	Poaching rampant, a small area settled in the south of park.	UWA	Unique biodiversity important for research and tourism.
Bwindi Impenetrable F.N.P	331	1992	High diversity of birds, habitat to Mountain Gorilla.	Intensive cultivation to edge of park.	UWA	International Importance category A.
Mhahinga Gorilla NP	25	1991	Habitat to mountain gorilla and golden monkey.	Intensive cultivation to edge of park.	UWA	Gorilla tourism of international significance.
Rwenzori Mountains N.P	980	1993	High altitude forest, large number of endemic species with exceptional conservation value.	Large mammals severely depleted by hunting.		International importance, category A.

Table 3: Threats to the Nile Environment and Resources in Uganda

Issue	Symptoms / Impacts	Immediate Causes	Root Causes	Extent	Severity
Land Degradation					
Deforestation	Loss of vegetation cover	Heavy reliance of biomass energy, Unsustainable timber and fuelwood harvesting, Conversion of forested land into farmland.	Lack of energy alternatives Lack of protection of forests outside gazetted reserves, Population pressure.	Widespread	XXX
Soil erosion	Siltation of water bodies	Degradation of vegetation cover and catchment area buffer zones.	Poor land-use practices, Weak extension services on soil conservation.	Basin-wide	XXX
Wetland degradation	Diminishing area of wetland coverage.	Wetland conversion to open up more land for agriculture.	Inadequate enforcement of wetland policy at community level.	Widespread	XXX
River bank and lakeshore degradation	Degradation and loss of protective buffer zones at lake shore and river banks	Poor land-use practices.	Lack of a national land-use plan Population pressure Expansion of farmlands	Localised but on the increase	XX
Mining impacts	Polluted water bodies due to high concentration of mine-related pollutants	Discharge of un-treated mining effluent	Failure to implement and enforce national anti-pollution laws.	Localised	X
Loss and destruction of valuable species, special ecosystems, and habitats	Ecosystem degradation	Poor land-use practices	Inadequate awareness on biodiversity conservation concerns, Heavy reliance on natural resources base due to poverty.	Widespread	XXX
Water quality degradation:					
Pollution (point and non-point source)	Degradation of water quality	Discharge of un-treated wastewaters Degradation	Non-compliance with national waste water discharge	Point source pollution severe especially in	XXX

Issue	Symptoms / Impacts	Immediate Causes	Root Causes	Extent	Severity
		of vegetation cover in catchment	Regulations and standards. Poor land-use practices.	the major urban centres	
Eutrophication	Excessive nutrient input into water bodies leading to degradation of water quality.	Catchment area degradation,	Poor land-use and farming practices	Widespread and basin-wide	XXX
Water weeds infestation	Interference with ecological balance and socio-economic activities	Inadequate timely response mechanisms to weed invasions	Eutrophication of water bodies.	Widespread with potential to increase	XX
Water borne diseases	Widespread disease incidence	Poor sanitary conditions	Poor sanitary infrastructure Poverty	Widespread an on increase	XXX
Siltation	Heavy silt loads in water bodies	Land degradation in catchment Inadequate soil and water conservation practices	Poor land-use and agricultural practices Limited awareness on link between land-based activities and water pollution	Widespread and basin wide	XXX
Sewerage discharge in lakes (from boats)	High Nutrient loading and Eutrophication of water bodies.	No immediate alternative	Direct sewage discharge	Limited but with potential cumulative impact	X
Urban and industrial issues					
Sanitation concerns (urban run-off, sewerage discharge)	High Nutrient loading and Eutrophication of water bodies.	Poor sanitary infrastructure	Inadequate resources for infrastructure provision Limited awareness among population	Localised and concentrated in urban centres	XXX
Urban development and industrialization on lakeshores and river	Degradation of lake shores and River banks	Lack of land use planning	Lack of national land-use policy	Widespread and on the increase.	XXX

Issue	Symptoms / Impacts	Immediate Causes	Root Causes	Extent	Severity
banks					
Water-borne diseases	Increased incidence of diseases such as cholera	Inadequate sanitary infrastructure	Poverty and limited resources for sanitary infrastructure	Widespread and on the increase	XXX
Disaster preparedness and remediation					
Navigation risks, aids, and mapping	Incidence water based navigation disasters	Accidents	No emergency response systems	Limited but with catastrophic consequences during occurrence	X
Oil spills	Increased oil spills	Accidents	No emergency response systems	Regular	XX
Floods and droughts	Variable climatic conditions	Widespread land degradation, including buffering riverine and lakeshore ecosystems.	Lack of reliable forecasts No emergency response systems Widespread ecosystem degradation	Limited but with catastrophic consequences during occurrence	X
Refugee problems	Heavy land and vegetation degradation around refugee settlements.	Heavy pressure on biomass energy and for cultivation	Recurrent wars and human rights abuses	Widespread with no immediate foreseeable solution	XXX
Uncertain impacts of climate change					

Table 4: Recent, Current and Planned Environmental Initiatives, Programmes and Projects in Uganda

Programme / Project	Period	Budget (US$)	Implementing Agency	Donor Agency
Cross-border Biodiversity Project	1998-2002	1.77	MWLE (NEMA)	UNDP
National Wetlands Conservation and Management Project	July 1996-2001	2.2 Million	Ministry of Water Lands and Environment (MWLE).	Netherlands Govt.
Tree seed Project	Oct 1998-2003	2,062,912	NORAD/GoU funded and implemented by Forestry Dept.	NORAD/GoU Funded
South East and South West Integrated Watershed Management Project.	July 99 - 2004	3.65	Forest Dept.	ADB
Natural High forest Management and Conservation Project	1999/2000		Forest Department	EU
Lake Victoria Environment Management Project	1996-2001	20.45	MWLE	World Bank
Environment Management Capacity Building Project	1996-2000	8.35	NEMA	World Bank
Support to National Parks and Wildlife Management.	1995-1999	5.02	UWA	USAID
Environment Laws and Institutions Project	1996-1999	0.40	MWLE	UNEP
Peri-urban Plantations Project	1996-2000	1.8	MWLE (Forest Dept)	NORAD/GoU
Mt. Elgon Conservation and Development Project	1996-2000	1.37	MWLE	IUCN
Biomass Study Phase III	1996-2000	0.72	Forestry Dept.	
Development Through Conservation Project	1989-2002	2.75	Ministry of Tourism, Wildlife and Industry	
Water Resources Assessment Project			Directorate of water Development	DANIDA

Table 5. Priority Actions in Uganda

Environmental Issue	Priority Action	Scale	Emphasis	Urgency
Land degradation	Control of deforestation	National	Community actions in Catchments including mountainous areas	XXX
	Protection of forest resources outside protected reserves	Local and limited to specific areas	Law enforcement on Forests and woodlands surrounding protected reserves.	XXX
	Enhancement of community tree planting programmes	National and Local	Provision of seedlings to communities	
	Awareness creation to promote sound land-use and soil conservation practices	National and local targetting riparian communities.		
Pollution of water bodies by industries	Control of untreated industrial discharges,	Localised especially in urban industrial centers but with severe impact,	Major urban and industrial centers	XXX
	Inventory and control of pollution hot spots	Local		
	Enforcement of standards on effluent discharge	National		
	Harmonisation of laws and standards on waste discharges in ripraian countries, Adoption of cleaner production technologies	basin-wide		
Siltation of water bodies	Instituting sound land-use and agricultural practices	National Local	Community capacity building	XXX
	Awareness creation among riparian communities	National Local	Awareness and management information.	XXX
	Strengthening of community-based water resources management	National Local		
Encroachment into protected and marginal wetlands and shoreline areas.	Law enforcement to protect shoreline ecosystems	National Local	Community-based management programmes, Law enforcement, Inventory and designation of protection zones	XXX
	Development of land-use policy	National		
Limited environmental awareness	Awareness creation	National	Riparian communities whose activities impact on the Nile resources and the major lake basins	XX
Biodiversity loss	Protection of sensitive ecosystems such as forests and wetlands	National Local	Law enforcement in reserved areas	XX

Environmental Issue	Priority Action	Scale	Emphasis	Urgency
	Development of policies to protect biodiversity outside protected areas	National		
Urban sanitation and waste disposal	Control of raw sewage discharge	Local	Management Programme, capacity building	XX
Disasters				
Navigation risk	Emergency measures	National Local	Technical development	XX
Oils pills	Emergency measures	Local	Technical development	XXX
Refugee problem	Studies on suitability of resettlement areas and availability of energy sources.	Local	Environmental studies Planning framework Political intervention	XXX

Appendix 1: Summary of issues on natural resources in the Nile basin.

ISSUES	Water Resources			Forest Resources	Agricultural Lands	Wildlife
	Lakes	Rivers/ Streams	Wetlands			
1. Socio-economic benefits	Source of fish -Source of employment and income, -Water supply, -Transport.	-Source of fish -Income and employment -Power generation, -Tourism amenity, -Recreation and natural heritage.	-Crafts materials -herbs, -Source of fish, -agriculture, -Tourism amenity	-Timber supply, -Fuel source -Poles -wind breakers	-Food production	-Tourist attraction -Employment and income, -Natural heritage
2. Ecological benefits	-Habitat for biodiversity, -Climate moderation, -Pollutant sink	-Habitat for biodiversity, -Climate moderation, -Pollutant sink.	-Pollutant and nutrient filters, -Climatic moderation, -Silt traps, -Flood control (hydrological balance) - Habitat for wildlife	-Micro-climatic moderation, -habitat for biodiversity, -Water catchment -Soil and water conservation.	-Food production	-Gene bank, -Biodiversity asset,
3.Environmental problems affecting natural resources	-siltation, -pollution -overfishing -infestation by water hyacinth	-siltation, -pollution (industrial effluents and organic waste) -overfishing	-Agricultural encroachment, -pollution, -Over-exploitation, -Drainage.	-Excessive tree cutting and associated loss of vegetation cover, -Lack of alternatives for fuel.	-Soil erosion, and associated loss of fertility.	-Habitat loss and associated biodiversity decline.
4. Causes of socio-economic impacts to natural resources	Overfishing, Siltation, Industrial Pollution,	Siltation, Pollution as a result of shoreline cultivation and industrial discharges	-Burning, -Discharge of untreated wastewater, -Agricultural encroachment, -Over-harvesting of wetland products.	-Limited protection of forests outside protected areas, - Unsustainable timber and woodfuel harvesting, -Limited community participation in tree	-Over cultivation, -Soil erosion, -Unsound agricultural practices.	Illegal encroachment into protected areas, Breakdown of law and order in the 70s.

ISSUES	Water Resources			Forest Resources	Agricultural Lands	Wildlife
	Lakes	Rivers/ Streams	Wetlands			
				planting programmes.		
5. Measures being taken to address /alleviate problems affecting natural resources.	-Research by FIRI on effects of Pollution, -Audit of industries by NEMA, -EIA for all new industrial projects and other major projects with potential to affect water resources.	-Audit of existing industries to recommend corrective action for pollution abatement. -EIA for all new industrial projects and other major projects with potential to affect water resources.	-Regulate activities in wetlands, -Awareness and research on wetland values, -Inventory of wetland abuses by Wetlands Programme.	-Tree planting programmes ongoing, -Community participation in afforestation programmes being encouraged, -Enhanced enforcement to prevent further encroachment into forest reserves.	Extension services provided to advice farmers.	Demarkation of boundaries for wildlife reserves to control further encroachment, -Community wildlife conservation programmes encouraged.
6.Potential impacts of future development on natural resources	Water quality deterioration through eutrophication and Pollution, Fish Kills.	Water quality deterioration through eutrophication and pollution, Fish Kills.	Siltation, wetland drainage and reclamation	Increased reduction of tree cover	Soil erosion and loss of fertility	Loss of species and habitats
7. Existing policies and laws on natural resources management.	Environment Statute 1995 Section 35 -36, Environment Policy, Regulations for protection of Lake shores and river banks.	Environment Statute Sec.35, 36 and 58 on pollution control, Environment Policy, Regulations for protection of lake shores and River banks.	Environment Statute 1995 Sect. 37 -38 and 58 on Pollution, Wetland Policy.	The Forest Act, the Forest Policy.	Part VII of Environment Statute on "Environment management"	Environment Statute on Biodiversity conservation, National Biodiversity strategy under preparation Wildlife Statute.
8. Constraints to effective natural resources	-Limited enforcement of Environment Standards, -Limited awareness	-Limited enforcement of Environment Standards and Regulations,	-Limited awareness among riparian communities.	Lack of protection of forests outside gazetted	Poor and inadequate extension	-Continued encroachment into gazetted

ISSUES	Water Resources			Forest Resources	Agricultural Lands	Wildlife
	Lakes	Rivers/ Streams	Wetlands			
management	among private sector, -Local unavailability of cleaner production technologies.	-Limited awareness among riparian communities, -Lack of a national Land-use Plan and Policy.	-Lack of clear wetland management guidelines for use by wetland users. -Lack of community-based wetland management.	reserves.	services on soil conservation.	wildlife reserves, -Limited community participation on wildlife management.

Appendix 2: List of individuals who participated in the National Consultative workshop,25th February 2000

1. Eng.B.K Kabanda — Permanent Secretary, Ministry of Water, Land and Environment,
2. Eng. P.O Kahangire — Director, Directorate of Water Development.
3. Charles Sebukera — The Director, Information and Monitoring Division, National Environment Management Authority.
4. Moses Mapesa — Uganda Wildlife Authority.
5. Eng P. Mubiru — Commissioner, Energy.
6. Mr. Kapasi Kakama — Commissioner, Industry
7. Dr. Panta. Kasoma — Director, Makerere University Institute of Environment and Natural Resources.
8. Mr. Paul Mafabi — Ag. Assistant Commissioner, Wetlands Inspectorate 9. Mr. Edward Mupada — National Cross-border Biodiversity Project.
10. The Director, Animal Resources, MAAIF.
11. Mr. Rwandume Mugizi — Kampala City Council.
12. Eng. Oryang — Member Water Policy Committee.
13. Dr. Frank Kansiime — Makerere University Institute of Environment and Natural Resources.
14. Dr. Yusuf Kizito — Zoology Department, Makerere University.
15. Dr John Balirwa — Fisheries Research Institute.

16	F. Sengooba	UTV
17	P. Ojirot	Radio Uganda
18	J B Kalule Sewali	MAAIF
19	Bidasala Henry	Min. Energy and Minerals
20	C M Juuko	NBI, Entebbe Office
21	Benon A Cosmos	Dept. of Information
22	Nalubega Mai	Makerere University
23	Prof. G. N. Katashaya	Makerere University
24	Sirazo Mayso	Ministry of Tourim and Trade
25	Matovu Abdalla	Directotae of water Development.22
26	David T.	Fisheries Department
27	Idrakua Lillian	WRMD
28	Dr. John Barirwa	FIRI
29	Susan Frances	CFDA
30	E K Bagarukayo	Met. Dept.
31	Immaculate Sekito	Dept. of Agriculture
32	Mr Michael Wells	World Bank
33	Christine Schwebach	World Bank
34	Eng. E. B. Rwamushwa	MAAIF
35	Tom. Mugisa	MAAIF
36	Dieter Speidel	GTZ/UWA
37	R. Lubanga	DWD
38	Andrien Kintu	Makerere University
39	Wandera Omara	Monitor
40	Mr. Mohammed Badaza	DWD
41	Peace J. Katabarwa	DWD
42	Esimu Elimu M.	UEB
43	Mr. Mwanje	Graduate Student
44	Jacqueline Aarakit	DWD
45.	Kyosingira Fred	WRMD
46	Omara I. M.	DWD
47	Gwendoline Kyoburungi	DWD
48	Aryagaruka Martin	NEMA

Local Authorities

49. Mr Musoke Solomon, the District Environment Officer, Mukono District.
50 Mr. George Oratungye, the Principal Environment Officer, Jinja.
51. The District Agricultural Officer, Mukono District.

NGOs

52. Mr. Frank Turyatunga, The Director, Environment Protection and Economic Development (EPED) Project, Masindi.

53. (Mrs. Ruth Mubiru), the Director, Uganda Women Tree Planting Movement>

Appendix 3: List of Action Plans

i. The National Environment Action Plan.

This was prepared in 1994 in order to operationalise the National Environment Management Policy. Prior to the development of the National Environment Action Plan, environmental issues were handled on a sectoral basis.

The national Environment Action Plan was developed together with a corresponding Investment programme which identified 5 priority investment areas, namely;

a). Capacity building in environment management,
b). Enhancing resource (land and water) productivity,
c). Management and use of biodiversity,
d). Environmental Education and Public awareness, and
e). Environment health and pollution management.

Other existing sectoral Action Plans include the following:

ii. The National Biodiversity Action Plan.

The obligation to prepare a National Biodiversity Strategy and Action Plan is contained in the Convention on Biological Diversity for all countries party to the Convention. Uganda ratified the Convention on 8th September 1993, and through financial support form the Global Environment Facility (GEF), a draft National Biodiversity Strategy has been prepared and is currently under review.

ii. The Programme to Modernise Agriculture (PMA) to be implemented by the Ministry of Agriculture Animal Industry and Fisheries.

iii. The Meteorological Action plan that ensures infrastructure development and capacity building for monitoring the climate resource and management climatic information.

iv. The Forestry Programme for management of forests.

v. The Water Action Plan

vi. The Energy Sector Programme.

vii. The National Wetlands Conservation and Management Programme for sustainable utilisation and management of wetland resources.

Appendix 4:

REPORT OF THE NGOS CONSULTATIVE MEETING ON THE NILE BASIN INITIATIVE 29TH MARCH, 2000

The NGO consultative meeting was convened as a follow-up of an earlier National Consultative Workshop held on the 26th February 2000 in Kampala, and during which a recommendation was made to the effect that an NGO consultative forum be held in order to obtain input from the NGOs for incorporation in the Nile Basin Initiative.

As an introduction, the NGOs were given an overview of the NBI Programme and the various Pillars under it. It was also noted that since most activities the NGOs are engaged in are aimed at contributing to halting environmental degradation and achieving sustainable management, it was therefore imperative that NGOs be aware of the NBI at this initial planning stages such that avenues for their possible participation can be identified for inclusion in the programme. It was also noted that since the NGOs were already engaged in various conservation and environment management activities, it was important to understand what initiatives are already being implemented by them so that any other related proposals under NBI would only seek to compliment but not duplicate already ongoing efforts.

It was further clarified to the NGOs that by virtue of the entire Uganda territory being part of the Nile basin, the environmental issues of concern with regard to the Nile basin were likely to be similar to common environmental problems of Uganda as a whole. An overview of the environmental issues as identified during a meeting of experts from riparian countries in December was given and included, among others:

i. Land degradation mainly caused by

- Soil degradation as a result of unsustainable land use
- Deforestation due to heavy dependency on fuel wood/wood bio-mass
- Loss of biodiversity. This is mainly caused by non protection of biodiversity outside protected areas
- Inadequate community participation in the management of biodiversity.

ii. Water pollution as a result of:

- discharge of untreated industrial effleunts
- urban and agricultural run off,
- increased water edge activities and related unsustainable use of buffering resources,

iii. Wetland degradation

iv. Infestation of water bodies by water weeds like the water hyacinth

v. Problems related to the Urban environment. Towns along the Nile have a problem of with sanitation, management of solid wastes, sewage, etc

All the above issues, and others, were identified to be common to the riparian countries.
At sector level, the following issues are common:

- Increased river sedimentation (agricultural sector)
- Contamination of Nile waters due to mining activities (mining sector)
- Heavy reliance on wood biomass (energy sector)
- Limited awareness
- Population pressuree
- Lack of a regional land use planning.

The underlying causes of the above issues were enumerated as

- Large scale conversion of forest lands into farmland and lack of a policy to cover protection of forests outside protected areas
- Energy reliance on biomass energy
- Inadequate understanding of the link between water and land based activities
- Widespread poverty
- Population pressure
- Inadequate community / NGOs /CBOs participation in natural resource management.

The NGOs participants were informed that during the National Consultative workshop, it was recommended that increased community and NGO participation in environment management should be a priority under the NBI programme.

After the overview, the NGOs were then invited to present their proposals on what they would wish to see reflected and incorporated in the NBI programmes. Proposals presented included the following:

i. A special fund to support the activities and programmes of NGOs should be set up under the NBI so that the onus will be on the individual NGOs to come up with priority programmes for which funding will be sought from the find for implementation by the NGOs themselves.

ii. To include Eco-tourism among the programs to be addressed by the riparian countries.

iii. The question of poverty to be addressed through rural industrialization. This approach must be used if the riparian countries are to register any success in poverty reduction.

iv. Enforcement of standards and regulations relevant to protection of the Nile basin natural resource,

v. There is need to strengthen NGO and community water resource management (conservation). It was noted that there are few NGOs involved in the field of water resource management.

vi. Empowerment of women should be strengthened, as they are the ones who primarily (to a large extent) interact with the environment.

vii. There should be regional and basin-wide promotion of biodiversity conservation, and should include a component on conservation of biodiversity of direct economic value and benefit to the people, such as the shea butter tree.

viii. There should be enhanced sharing of market information in the region.This followed a recognition tat sometimes the problem is that of marketing rather than failure to produce.

ix. Every riparian member country should have NGO representation at high level consultations. This will bring about healthy collaboration when it comes to the implementation phase and will keep NGOs abreast with what is going on.

x. NGOs should be looked at by the riparian countries as avenues for community training and awareness.

List of participants at the NGOs consultative meeting held 29th March 2000.

Name	Organization	Area of focus
i. Justin Ecaat	NEMA	
ii. Martin Aryagaruka	NEMA	
iii. Muwanga E. B.	Greenwatch	Environment litigation
iv. Ssemitego John	Friends of wetlands	Wetlands conservation
v. Nsamba Eddy	Friends of wetlands	Wetlands conservation
vi. Banadda Nswa	Uganda Environmental Protection Forum	Urban waste
vii. Gubya Phoebe	Lugazi Peoples Enterprise Dev't Community	Poverty alleviation
viii Muramuzi Frank	National Association of Professional Environmentalists	Advocacy for environment protection
ix. Olupot P. Okaje	National Strategy for the Advancement of Rural Women in Uganda	Empowerment of rural women to fight poverty
x. Tumwesigye. J	National Strategy for the Advancement of Rural Women in Uganda	Empowerment of rural women on poverty eradication
xi. Tabitha Kakuze	Jinja Urban Wetlands Women Organization	Wetlands Management
xii. Nyende Paul	Uganda Neem Movement	Tree planting
xiii Lubega Drake	Kakuto Fish Farming	Fish farming
xiv. Ochangui J.	Action for Rural Development	Poverty concerns and rural development.
xv. Rauxen Zedriga	The Uganda National NGO Forum	Coordination of NGO activities
xvi. Egesa Milton	Uganda Wetlands and Resource Conservation Association	Wetlands conservation
xvii. Ogwal Palmenas	Auxfound	Environmental awareness creation and capacity building.

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