



THE REPUBLIC OF UGANDA



PROJECTS AND ACTIONS
ANNEX REPORT - VOLUME 4 (DOC. 013)

MINISTRY OF NATURAL RESOURCES
DIRECTORATE OF WATER DEVELOPMENT

1995

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UGANDA WATER ACTION PLAN

WATER RESOURCES DEVELOPMENT AND MANAGEMENT

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VOLUME 4

LIST OF CONTENTS

Annex 17	Projects and planning tools
Annex 18	Project profiles
Annex 19	Action profiles

ANNEX 17

PROJECTS AND PLANNING TOOLS

ANNEX 17**LIST OF CONTENTS**

1	PREAMBLE	1.1
2	DEVELOPMENT PLANS AND PROGRAMMES	2.1
	2.1 National priorities	2.1
	2.2 Water related sectoral development policies and plans	2.2
3	WATER RESOURCES RELATED PROJECTS	3.1
	3.1 Introduction	3.1
	3.2 Summary of projects	3.1
4	ENVIRONMENTAL IMPACT ASSESSMENT	4.1
	4.1 Introduction of EIA in Uganda	4.1
	4.2 Role of water resources impact assessment in project planning and prioritisation	4.4
5	UPDATING AND COORDINATION	5.1
	5.1 Coordination	5.1
	5.2 Project Database	5.3
	5.3 Implementation of a coordinated project information system	5.5
6	PRIORITISATION OF WATER RESOURCES RELATED DEVELOPMENT PROJECTS	6.1
	6.1 Introduction	6.1
	6.2 Water as a social and economic good	6.1
	6.3 Project analysis and prioritisation	6.2
	6.4 Results and requirements	6.6

1 PREAMBLE

The integrated water resources management approach implies that the sectoral developments are evaluated for possible impacts on - or requirements to the water resources and that such evaluations are considered when designing as well as prioritising development projects. For this reason, the water resources management system must include cross sectorial information exchange and coordination procedures, techniques for evaluation of individual project with respect to their implications for the water resources and procedures ensuring that the water resources aspects are included in the final design and prioritisation of projects.

In general the process should be as follows:

- Rapid screening of the project for possible water resources implications

and if the project is found to imply water issues it should be subject to:

- Impact assessment (possibly EIA)
- Evaluation of possible specific requirements to the involved water resource and recommendations to project design on fulfilling such requirements
- Identification of possible interaction/competition from other planned or ongoing projects regarding the use of the water resource
- Recommendations on possible improvements on project design regarding optimal exploitation of a given water resource

Finally, the evaluations and recommendations should be included in the prioritisation process of the projects emphasising both environmental and economical implications of the involved water resources issues.

Chapter 2 of the present annex describes briefly the overall development priorities of the Ugandan Government and the policies/priorities which today are guiding the prioritisation of development for the various water related sectors. In chapter 3 the currently prioritised projects involving water resources aspects are listed and finally, the subsequent three chapters propose guidelines for impact assessments, guidelines for updating and cross sectorial coordination and guidelines for prioritisation.

2 DEVELOPMENT PLANS AND PROGRAMMES

2.1 National priorities

National economic and social development policies for Uganda are set out in the Government's Rehabilitation and Development Plan 1993/94 - 1995/96, Volume I, Macroeconomic and Sectoral Policy, December, 1993.

The principal objectives of the Plan include accelerated economic growth and a sustained improvement in the social welfare of the population. In the social sector poverty alleviation is targeted through better health and education, and the provision of safe drinking water. Mobilisation of private resources for these services is encouraged and for water supplies cost recovery schemes envisaged. The social infrastructure sector accounts for the largest proportion of planned expenditure within the Plan, reflecting the recognition by both Government and donors that health, education, water supplies and other services have been relatively neglected in the past, and that investment in this sector is primarily a Government responsibility.

In accordance with Government policies to target development funding to poverty alleviation and to improve resource allocation certain key sectors have been given priority status and they receive priority in the allocation of Government funds in the development budget. In 1991 the following priority areas were designated:

- agricultural research and extension,
- feeder road rehabilitation and maintenance,
- trunk road maintenance,
- primary health care,
- primary education, and
- rural water supplies.

More recently the list has added strengthening of the following Government departments, police, prisons, judiciary, Auditor General's office and Inspector of Government.

A further restructuring exercise started in 1993/94 by classifying the development budget into core and non core projects. According to the Draft Report on The Restructuring of the Development Budget by the Public Expenditure Review Mission, March, 1994, the objective of this classification is to protect the core projects from budget cuts, with a Government commitment for timely release of their budgeted funds. This has already led

to a more efficient flow of resources to these projects with a positive impact on project implementation.

The criteria for inclusion in the list of core projects cover aspects like consistency with Government development objectives, design and implementation strategies, economic justification, recurrent cost implications, project finance, nearness to completion and completion costs.

During the three year plan period, 1993/94 - 1995/96, total development expenditure is estimated at 1.6 billion USD of which 8 %, equalling 126 million USD, will be used in the water sector.

2.2 Water related sectoral development policies and plans

2.2.1 Water supply and sanitation

The water supply and sanitation policies have up to now been developed in a thematic fashion. Policies and guidelines exist for instance for handpumps, gravity schemes pit latrines etc. Presently, a coherent overall water supply and sanitation policy is under development and a preliminary discussion draft is found in WAP Doc. 006 "Water Policy".

2.2.2 Industry

The manufacturing sector contributes substantially to the national economy through providing forward and backward linkages with the agricultural and other sectors, including the production of exports and import substitutes, and the creation of rural non farm production and employment. Government policy is designed to limit its financial obligations to the sector and privatisation of state enterprises is proceeding steadily. Private sector investment is being encouraged.

Water use and discharge of waste water are currently not considered to any great extent in the national industrial policies, but are important factors for water resources conservation.

2.2.3 Agriculture

Crop Production

The main policy objectives in the agricultural sector are to increase yields especially of export crops such as coffee, tea, and cotton in order to increase export revenues, and further to achieve self sufficiency in food production. The main measures to increase smallholder production are strengthened research and extension services, improved infrastructure including feeder roads, quality control and liberalised marketing. General increase in the yield of export crops will furthermore require increased use of agricultural

inputs such as fertilizers and pesticides.

Although the identified potential area for irrigation, this does not consider economic or social factors and large scale irrigation development is therefore not a Government priority within the agricultural sector. However, small scale rice production involving exploitation of swamps and valley bottoms is increasing, and development of upland rice production is being encouraged by Government.

The linkages between the agricultural sector and the water resources goes among others through the impact from agricultural practices, use of pesticides and fertilizers and the water requirements from irrigation.

Livestock

National policy objectives in the livestock subsector include:

- increased animal production and productivity,
- increased exports,
- adequate disease control, and
- increased self sufficiency in meat and milk through rehabilitation of research and extension services and price liberalisation.

The strategy includes preserving the natural resources and developing their productive capacity.

In the arid northern and northeastern areas rehabilitation of existing dams and construction of new ones to provide water for livestock is a priority as a means of re-establishing herds and increasing the production of meat and milk. Livestock water requirements are acute in these areas during the dry season when surface sources dry up. But provision for livestock water requires integration with pasture availability to prevent degradation of the land resource.

The forthcoming Master Plan study for Meat Production will identify in more detail the constraints and potentials, and policy measures necessary to achieve livestock sector goals. The linkage between livestock and water resources goes through the water requirement and the possible soil erosion in cases of overgrazing.

2.2.4 Energy

National priority objectives in the energy sector are:

- to rehabilitate the existing hydroelectric installations for generation, transmission and distribution,
- to develop additional generation and transmission facilities,
- to accelerate the programme for urban and rural electrification giving special attention to new investment areas,
- to increase tariffs to the level of long run marginal cost in order to raise resources for new investment in additional generating capacity, and
- to expand exports of hydroelectric power to neighbouring countries.

The rehabilitation and expansion of the hydroelectric generating capacity at the Owen Falls Power station is top priority. In isolated areas of the country which have usable water resources, the development of mini and small hydro schemes will be promoted where it is established that these schemes are more economic than diesel generation.

Hydropower has obvious linkages to the water resources situation, while the general energy situation has links to woodfuel use, deforestation and water resources conservation.

2.2.5 Fisheries

The policy objectives in the plan for the fisheries sub sector are:

- to increase self sufficiency in fish products, subject to the careful monitoring of the productivity of the national water system, the need to preserve local species and ensure sustainable production systems
- to restock lakes and rivers, starting with Lake Wamala, and increase their productivity by maintaining or improving water quality,
- to improve on the methods of production, processing and marketing of fish and fish products, and reduce post catch losses,
- to develop industries supplying fishing related equipment,

to promote export growth and diversification through private and joint venture enterprises.

The potential sustainable fish yield has not yet been accurately estimated. The quantification of the resource and the establishment of sustainable exploitation policies remains a priority.

The increase in processed fish exports arising from new fish processing facilities is expected to lead to a shortfall of fish for the growing domestic market, and high priority is given to increased production. Government is encouraging the development of aquaculture as one of the means to achieve increased production.

A major study is planned on the Regional Management of Lake Victoria, which would aim to provide a plan for the utilisation of the lake by all three riparian states taking account of fisheries potential and other uses of the lake.

A Master Plan for the Fisheries sector is also to be undertaken this plan will identify the principal opportunities for expanded production and increased economic benefits. It will also assess the scope for expanding aquaculture.

The linkage between fisheries and the water resources lies in the preservation of a sensible water quality where fishing is undertaken and prevention of pollution from fish processing industries and aquaculture activities.

2.2.6 Natural resource/environment management

Policies aim to maintain the environment focus on the need to reverse the land degradation that has occurred during the past 20 years. Sustainable development is promoted through ensuring that environmental factors are considered in planning and implementation of projects. Appropriate agricultural and agro-forestry techniques for sustainable food and forestry production are also encouraged. The National Environment Action Plan is addressing these issues together with the accompanying institutional and legal framework.

Forestry is recognised as playing a significant role in the socio-economic development of the country, as wood is a major input in the building industry, in addition to being the main source of household energy throughout the country. Protection of the nation's forests is therefore, a priority programme, and the Government will continue to promote sustainable forestry management practices, increased vegetation cover through the National Tree Planting Programme, and will encourage local participation in afforestation and reforestation. The impact of forest cover on water sources, and the need to protect

watersheds have not been made explicit policy objectives, in spite of their importance in protecting water resources, and preventing flooding.

With regard to pollution caused by untreated industrial waste water the objective is to improve the quality of the environment so that it does not present health hazards to humans, nor impair the capacity of natural resources to support plant and animal life.

Development of infrastructure in national parks to encourage tourism is a policy objective in the current plan.

The formulation of a mining code and mineral tax regime which will attract private sector investment is a policy objective for the mineral sector.

3 WATER RESOURCES RELATED PROJECTS

3.1 Introduction

This Chapter contains a list of identified ongoing or planned water resources related projects within a wide range of sectors. The list is intended to provide an overview of activities that may have a bearing on, or be of significance in management of, the water resources of Uganda and therefore should be known by those administering the water resources. Projects from two sources have been considered:

- Ministry of Finance and Economic Planning: Rehabilitation and Development Plan 1993/94-1995/96 (RDP)
- NEAP: Investment Programme, January 1994.

The following criteria have been applied for inclusion in the list below:

- is execution of the project/programme likely to have any impact on the water resources (quantity or quality)
- does execution of the project/programme imply any requirements as to water resources (quantity or quality)
- is execution of the project/programme likely to provide any information relevant for management of water resources

Projects considered to fulfil at least one of these criteria are included in the list.

3.2 Summary of projects

The identified projects are listed below with a short rationale for inclusion. Project profiles for the projects included in RDP are found in Annex 18. Project profiles for projects included in the NEAP Investment Programme are not available at present but transformation into the RDP project profile format for these projects are underway within the Ministry of Finance and Economic Planning.

Together with the project title, the RPD projects have been given the project code for easy reference to the RDP database. The NEAP projects have no project codes, instead reference to the relevant investment programme area is given:

- institutional capacity building (ICP)
- enhancing resource productivity (ERP)

- biodiversity conservation and use (BCU)
- environmental health, population and pollution management (EHPPM)

The project status "ongoing" means that project activities have been initiated, according to the RDP project profiles, as per December 1993; while "planned" has a dual interpretation:

- for RDP projects: the projects have been given priority by GoU but have not yet started
- for NEAP projects: the projects have been proposed by NEAP but have not necessarily been approved by GoU as per May 1994.

Table 3.1 - List of water resources related projects within the agricultural sector.

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
Olweny Rice Irrigation Scheme AG07(A)	Ongoing	To increase food grain production and rural incomes and employment	800 ha will be used for rice production and will need water for irrigation, which may impact availability of water for other users
Banana Cropping Systems AG21(A)	Ongoing	To restore food self-sufficiency and maintain the cultivated hectareage as well as improve the productivity of the present banana stands	Agricultural practices may have an impact on soil erosion and consequently on siltation of streams
Cocoa Development Programme AG25(A)	Ongoing	To rehabilitate and develop the cocoa industry through research, provision of cocoa seedlings to farmers, training of extension staff and improvement of processing	Agricultural practices may have an impact on soil erosion and consequently on siltation of streams
Dairy Development Programme AG13(A)	Ongoing	To rehabilitate the Dairy Corporation plant at Kampala and milk collection centers; purchase of farm inputs, rehabilitate three department farms	The project activities involve rehabilitation of water supply which may impact availability of water for other users.
Rehabilitation of the Beef Industry AG16(A)	Ongoing	To increase beef production by rehabilitating two ranches in Masindi District, restocking ranches and upgrading local breeds	The project activities involve rehabilitation of water supply which may impact availability of water for other users
Fisheries Research Programme AG11(A-E)	Ongoing	To determine the stock of the various fish species in lakes; to strengthen fish research facilities; to conduct fisheries research and collect fisheries data	The project will provide information on limnology of Ugandan lakes, which is an element of assessment of the quality of the surface water resources
Eradication of Water Hyacinth AG35(A)	Ongoing	The project aims to exterminate water hyacinth from Ugandan waters	Excessive growth of water hyacinth poses a major threat to the water quality of surface waters

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
Water Hyacinth Research AG35(B)	Planned	To assess the impact of the spread of the water hyacinth on aquatic resources, and to locate and study control capability of native biological agents	Excessive growth of water hyacinth poses a major threat to the water quality of surface waters
Lake Victoria Regional Management AG47(A)	Planned	To execute fisheries research on Lake Victoria and to ensure discipline in its water management	Promotion of rational water resources management is part of the objective of the project
Fish Marketing Infrastructure Development Study AG18(A)	Planned	To improve methods of fish handling, processing, marketing and distribution	The project includes provision of treated water supply, which may have an impact on availability of water for other users
Meat Production Masterplan Study AG40(A)	Planned	To produce a comprehensive plan for the sustainable development of the meat industry and prepare investment projects	The project will include a study of availability of water for livestock
Agroforestry for the Alleviation of Environmental Degradation Project (ERP)	Planned	I.a. to improve soil fertility, crop production (through encouragement of recommended practices) and tree biomass, and hence contribute to conservation of the environment	Afforestation and changes in cultivation practices may affect e.g. the hydrological regime and soil erosion processes
Enhancing Soil Productivity through Improved Farming Systems (ERP)	Planned	To improve the productivity of land and increase farmers income and then raise the standard of living of the community	The project includes changing of farming practices which may affect e.g. the hydrological regime and soil erosion processes
Community Based Afforestation (ERP)	Planned	I.a. to improve the micro-environmental conditions by protecting water, air and soil	Through afforestation the project aims to reduce soil erosion and siltation of water courses
Tree Farming for Rural Communities (ERP)	Planned	To reduce the rate of deforestation and environmental degradation, and to increase afforestation activities in rural communities	Afforestation may affect e.g. the hydrological regime and soil erosion processes
Fisheries Master Plan (ERP)	Planned	To embrace all major and vital aspects of the fishing industry for the better development of the fishing industry	The project will give proposals for development of fish farming, which may affect availability of water of adequate quality for other uses
Dryland Farming Centre for Karamoja (ERP)	Planned	To ensure sustainable development and management of natural resources	Some of the main project activities are the provision of water and ensuring proper management of water sources
Irrigation Implementation and Development (ERP)	Planned	To set up an irrigation implementation unit which will be responsible for designing a policy and framework for the monitoring and coordination of irrigation development in the country	Policy for irrigation development must be closely coordinated with and subordinated to overall water resources policy, since irrigation may significantly affect availability of water for other uses

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
National Forest Action Plan (BCU)	Planned	To halt deforestation, restore and conserve forest resources	Forest policy and legislation may have a bearing on water resources and should therefore be closely coordinated with water resources policy
Conservation of Natural Forests through Establishment and Utilisation of Forest Plantations (BCU)	Planned	I.a. to supply wood products on a sustainable basis and to ensure and maintain the biodiversity of the remaining natural forests	Establishments of plantations may affect e.g. the hydrological regime and soil erosion processes

Table 3.2 - List of water resources related projects within the environment protection sector.

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
AFRENA Uganda Project EP02(D)	Planned	To contribute to increases in sustainable agricultural production through adoption of agro-forestry technology practices compatible with land-use systems in the highlands of Eastern and Central Africa	In the steep lands of South Western Uganda, emphasis will be placed on soil and water conservation through the use of contour hedgers placed in the middle of the steep cultivated plots
National Tropical Forests Action Programme EP06(C)	Planned	To enhance the role of forestry in national and local development plans, and to realize their full potential through policies and actions which promote sustainable forestry	Forestry practices, afforestation and deforestation may have an impact on the hydrological regime, e.g. in affecting base flow, minimum and maximum flow in streams
Forestry Rehabilitation EP08(A)	Ongoing	To improve management of Uganda's forest resources to meet domestic needs for wood products on a sustainable basis, and to protect unique ecological systems	Forestry practices, afforestation and deforestation may have an impact on the hydrological regime, e.g. in affecting base flow, minimum and maximum flow in streams
Environment Protection Pilot Villages EP01(A)	Ongoing	To meet basic needs of the populace through the provision of appropriate technological skills, expansion of potable water-supply and development of an agro-forestry system based on local and traditional practices	The project includes provision of potable water supply, which may have an impact on availability of water for other users. Also soil erosion control, which may have a bearing on water quality in streams, is part of the project
National Wetlands Conservation and Management Programme - Phase II EP02(C)	Ongoing	To assist Government to develop a policy for the conservation and sustainable use of wetlands and acquire the technical capacity to develop and implement this policy	Wetlands are an important part of the water resources of Uganda and therefore conservation and management of wetlands is closely connected to overall water resources management
Mbarara Bare Hills EP03(B)	Planned	To stop environmental degradation in the bare hills in Mbarara District, based on proper land use techniques	The project covers i.a. soil erosion, tree planting and agro forestry practices, which may impact the hydrological regime and water quality of streams

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
National Environment Information Centre EPO6(A)	Ongoing	To provide accurate, reliable and timely information on the environment in order to aid decision making and public awareness	Information about the state of the water resources is an important part of the information needed to assess the state of the environment in general
National Environment Action Plan EPO6(B)	Ongoing	To assist the country's public and private sectors to more effectively and sustainably manage the natural resource base in selected areas	Since water resources is a part of the environmental sphere, management of water resources must be subordinated to and coordinated with overall environmental management
Establishment of NEMA (ICP)	Planned	To establish an institution to oversee and co-ordinate environmental management, and to provide information for use in policy formulation, program implementation, environmental audit and research	Water resources management has to be subordinated to overall environmental management. Therefore, close co-ordination between authorities responsible for environmental and water resources management is necessary
Policy and Legal Review Project (ICP)	Planned	To ensure that environmental concerns are integrated in development policy, planning and implementation at national, district and local levels	Review of water resources policy, laws and regulations is part of the project
Environmental and Natural Resources Degradation Studies (ERP)	Planned	To obtain data which will allow accurate determination of the extent and severity of the natural resources degradation and their geographical occurrence	Water resources are part of the natural resources
Uganda National Soils Survey (ERP)	Planned	To update and systematically improve the inventory of the soil resource in Uganda in order to provide policy and decision makers with appropriate information	Activities covering soil and water management are envisaged as part of the project
Formulation of the Uganda National Land Use Plan (ERP)	Planned	I.a. to inject public resources into sustainable activities like conservation of soil, water and other land resources	The project may contribute information as to the current state of the water resources of Uganda
Development of Sustainable Management Systems for Uganda's Rangelands (ERP)	Planned	To assess the contribution of various land use practices to environmental degradation and develop sustainable management systems for the rangelands	Improvement of water yields and reduction of siltation problems through development of rational watershed management are parts of the project activities
Environment Protection in Kashaari County (ERP)	Planned	I.a. to involve rural communities in restoration and protection of their environment, integrating their farming systems with afforestation	Afforestation and changes in farming practices may affect e.g. the hydrological regime and soil erosion processes
Conservation of Lake Victoria Basin in Uganda (BCU)	Planned	To conserve the biodiversity, and to increase productivity of Lake Victoria and the lake basin ecosystems	Eradication of the water hyacinth and afforestation are components of the project that may affect quality and quantity of water resources

Table 3.3 - List of water resources related projects within the manufacturing industry sector.

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
The Sugar Industry (Kinyara) IT03(A)	Ongoing	To develop Kinyara Sugar Complex into a 1500 tonnes of cane per day estate and (tcd) factory	The factory will need large volumes of water for processing of cane and may significantly affect availability of water for other uses. The wastewater has high concentrations of BOD and may severely affect water quality in the recipient
The Sugar Industry (Kakira) IT03(B)	Ongoing	To restore Kakira Sugar Works to a capacity of crushing 2500 tonnes of cane per day	The factory will need large volumes of water for irrigation and processing of cane and may significantly affect availability of water for other uses. The wastewater has high concentrations of BOD and may severely affect water quality in the recipient
National Leather & Footwear Industry Scheme IT26(A)	Ongoing	To reinforce the capabilities of the Ugandan hides, skins and leather products sub-sector	Leather industries, particularly tanneries, produce strongly polluted wastewater which may severely affect water quality in the recipient

Table 3.4 - List of water resources related projects within the mining and energy sector.

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
Investment in Kilembe Complex ME05(A)	Ongoing	To carry out preliminary activities necessary for the eventual rehabilitation of the mine and detailed laboratory studies to assess the possibilities of recovering cobalt and nickel	If rehabilitated, the mine complex will need much water for processing ore material, and produce large amounts of wastewater
Power III ME04(A)	Ongoing	To enable Uganda Electricity Board to meet growing demand for electricity and to provide reliable power to its consumers at least cost	The project includes the construction of an extension to the Owen Falls Station, and regulation may affect the flow regime in the Upper Nile

Table 3.5 - List of water resources related projects within the health sector.

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
South West Integrated Health & Water Project HI10(A)	Ongoing	To reduce morbidity and mortality among children and mothers	The project includes provision of safe water supply (spring protection, handpump rehabilitation, borehole drilling and gravity flow schemes) which may affect the availability of water for other uses. Data from boreholes and wells must be supplied to DWD

Table 3.6 - List of water resources related projects within the water infrastructure sector.

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
Rural Water Supply & Sanitation Programme W105	Ongoing	To increase access to potable water and to promote better sanitation	The project includes rehabilitation and construction of various sources of water supply, which may affect the availability of water for other uses. Also investigation of groundwater potential is part of the project. Data from boreholes and wells must be supplied to DWD
Rural Water & Sanitation, East Uganda W106(A)	Ongoing	To improve rural water supply and sanitation systems in Eastern Uganda so as to reduce water related diseases and the burden of water collection	The project includes rehabilitation and construction of various sources of water supply, which may affect the availability of water for other uses. Data from boreholes and wells must be supplied to DWD
Completion of Katwe/Kabatooro, Bushenyi ... Water Supply Schemes W101(A)	Ongoing	To supply water for nine towns for the benefit of 80,000 people	Provision of water for domestic use may affect the availability of water for other uses. Data from boreholes and wells must be supplied to DWD
Second Water Supply Project W102(A)	Ongoing	To expand and improve water supply systems as well as waste water treatment facilities and service capacities in five major towns	Expansion of water supply schemes and sewerage schemes may have an impact on availability of water for other uses and on water quality in the recipient of wastewater. Data from boreholes and wells must be supplied to DWD
Small Towns Water & Sanitation Programme W104	Ongoing	To provide improved water supply and sanitation to 60 small towns and about 200 rural growth centres outside the 9 major towns under NWSC jurisdiction	Provision of water for domestic use may affect the availability of water for other uses. Data from boreholes and wells must be supplied to DWD
National Water Action Plan W109(A)	Ongoing	To introduce sustainable planning, utilization and management of the national water resources for enhanced and integrated socio-economic development	See objective
Establishment of National Criteria/Guidelines for Water Quality Monitoring and Control W107(A)	Planned	To initiate and organise an effective water quality surveillance programme and to establish national water quality guidelines	The project will upgrade and improve the analytical capacity for water resources monitoring and provide information on water quality, which is a necessity for rational water resources management
Rehabilitation of Water Resources Monitoring and Assessment Services (ICP)	Planned	To rehabilitate the national surface water resources monitoring and assessment system in order to ensure information for future sustainable use of water resources	The project provides the equipment and knowledge required for obtaining relevant data for rational water resources management

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
Water Resources Assessment for the Integrated Development and Environmental Conservation of Lake Kyoga Basin (ERP)	Planned	To assess the water resources of the country in a systematic manner for each major river basin as a basis for the planning and development of the water sector as an integral part of the socio-economic development of the country	See objective
Rural Water Supply and Sanitation (EHPPM)	Planned	To improve access to safe drinking water and environmental sanitation, and to strengthen management of installed facilities	Provision of water for domestic use may affect the availability of water for other uses. Data from boreholes and wells must be supplied to DWD
Development of National Water Quality Guidelines (EHPPM)	Planned	To design a country-wide network of sampling stations for water quality monitoring and to initiate a monitoring programme; to formulate guidelines and standards for ambient water quality	The project will provide information to decision makers and the public on the quality of Uganda's freshwater resources

Table 3.7 - List of water resources related projects within the tourism and wildlife sector.

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
Development Through Conservation TW08(A)	Ongoing	To contribute to the conservation of the Impenetrable Forest (Bwindi) and Mgahinga National Parks	The project includes changing agricultural practices which may affect quantity and quality of water resources
Rwenzori Mountains Conservation & Development TW08(B)	Ongoing	To devise a scientific and community-based conservation strategy for the Rwenzori Mountains National Park	Improved cultivation of slopes in order to reduce siltation of water catchments is part of the project

Table 3.8 - List of multi-sectoral water resources related projects.

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
Integrated Community Development MS08(A)	Ongoing	I.a. to increase the accessibility of safe water to the communities in Hoima District	Increased coverage of water supply may affect availability of water for other uses. Data from boreholes and wells must be supplied to DWD
Northern Uganda Reconstruction Programme MS01(A)	Ongoing	To reconstruct essential economic and social infrastructure in the north.	The programme will comprise projects i.a. in the field of water supply and sanitation. Increased coverage of water supply may affect availability of water for other uses. Data from boreholes and wells must be supplied to DWD
District Development MS02(A)	Ongoing	To combat the wide ranging physical and socio-economic problems facing the Karamajong people	Water development to overcome inadequate supply of water for both people and livestock is part of the project

PROJECT TITLE	STATUS	MAIN OBJECTIVE	RELATION TO WATER RESOURCES
Atmospheric Monitoring in Uganda (ICP)	Planned	To increase the level of climate data monitoring so as to support sustainable socio-economic activities	The project will improve the basis for achieving information on climate's influence on water resources - both on the hydrological regime and on pollution in form of atmospheric deposition

4 ENVIRONMENTAL IMPACT ASSESSMENT

In the process of providing information on water resources implications of development programmes and projects the impact assessment plays a central role. However, in addition to impacts on the physical environment, impacts on the water resources often also implies impacts on the biological and the socio-economic environment, and the assessments of impacts on the water resources should therefore often be seen as an integral part of Environmental Impact Assessment (EIA).

4.1 Introduction of EIA in Uganda

The National Environment Action Plan (NEAP) has identified the need of introducing Environmental Impact Assessments in Uganda, and in May 1993 "A Draft Framework for Environmental Impact Assessment in Uganda" was issued. This paper contains, in general terms, the recommendations from NEAP on EIA. The objectives, targets and strategies from the paper are quoted in Table 4.1.

Table 4.1 Environmental impact assessment - program direction (from "A Draft Framework for Environmental Impact Assessment in Uganda", NEAP 1993)

<u>The objectives for EIA in Uganda are:</u>	
To integrate environmental concerns into development policies, plans and projects in order to minimize adverse environmental impacts where feasible; and to involve the public in development planning at the national, district and local levels.	
<u>The targets for EIA are:</u>	
All future government policies and all government and private programs and projects; where "government" is defined as government entities at the central, district and municipal levels.	
<u>Strategies for implementation of EIA:</u>	
1	Legislation be adopted requiring the use of Environmental Impact Assessment in development policies, programs and projects;
2	The National Environmental Management Authority (NEMA) be established and given the responsibility for promulgating regulations for Environmental Impact Assessment, for monitoring their implementation, and for advising on their use;
3	Central, district and municipal government entities be required to modify their decision making processes to incorporate Environmental Impact Assessment, in compliance with the regulations promulgated by NEMA;
4	The Environmental Impact Assessment process allow for various levels of assessment, depending upon the significance of the environmental impacts of the activity and provide screening criteria for identifying the required level;
5	The Environmental Impact Assessment process ensuring public and interdisciplinary involvement be required throughout the decision making process, beginning at the earliest stages.

To avoid costly and time consuming analyses of each and every project under consideration the necessity of introducing different levels of assessment (depending on the nature of the projects) has been emphasised by NEAP. Such a categorisation is proposed to be based on an initial screening of the project(s).

NEAP has recommended the following four levels of assessments:

- categorial exclusion (i.e. no further studies) - to be used for activities which either have no potential to cause environmental impacts or are so small as to not warrant EIA
- environmental impact review - would be required for small scale activities for which mitigation measures alone can ensure environmental protection
- environmental impact evaluation (EIE) - would be required for larger scale activities. It is a more detailed analysis of alternatives, requiring inter-disciplinary and inter-sectoral participation. The purpose of EIE is to identify an alternative which does not have significant environmental aspects
- environmental impact study (EIS) - would be required for all actions which have significant impacts. EIS is a detailed, inter-disciplinary and inter-sectoral analysis of alternatives. It requires the development of a draft assessment with an opportunity for public review. The purpose of EIS is to identify an alternative with acceptable impacts. If no such alternative exists, the activity should not be implemented.

The criteria to be used in the screening process will mainly consist of predetermined types of activities being subject to each level of analysis (e.g. agriculture projects over a certain size falls into category X, small scale factories in category Y etc.). Preliminary versions of such lists for each level have been prepared, but it is at the same time realised that the number of programmes and projects that fall into each category depends on the criteria applied and therefore, the choice of criteria must be consistent with the institutional capacity for accomplishment and overseeing of EIAs. Such analyses still have to be made.

In general, the introduction of Environmental Impact Assessment in Uganda is at an early stage of proposals and recommendations and further work is needed. NEAP points out that besides an assessment of the institutional capacity versus criteria for classifying projects the most important future needs are the introduction of legislation followed by the elaboration of regulations and guidelines. The needs are thus defined to be:

For a number of planned activities, however, it might be obvious that only the aquatic environment is likely to be affected. In these cases the DWD should be the responsible authority.

From a water resources management point of view, impact assessments will typically be needed in cases of activities needing water abstraction or discharge permits and as an input to the prioritisation of development project with other kinds of water resources implications. Whether or not such assessments of impacts on water resources (and their socio-economic effects) become a part of a more comprehensive environmental impact assessment will depend on the criteria, eventually chosen, for classifying activities for different levels of EIA. In any case, there will be a need for developing procedures and guidelines for water resources impact assessments within the water resources authorities (WPC/DWD) - for own purposes as well as for assisting NEMA in the development of procedures for EIA.

4.2 Role of water resources impact assessment in project planning and prioritisation

The main objectives of impact assessment within water resources management are to identify water resources impacts of proposed plans, programmes and projects, thereby:

- assisting decision makers and their constituents in making informed decisions on project developments and final project prioritisation including water resources allocation
- providing, where possible, relevant quantitative water resources information so that potential impacts can be avoided or reduced in project and programme design and providing a basis for development of management measures to avoid or reduce negative impacts under and/or after project implementation

The impact assessment should form an integral part of multiple resource development planning and feasibility studies of projects. It should provide for a quantified assessment of the physical, biological, economic and social impacts of proposed projects as well as the likelihood of such impacts occurring. Thus, the impact assessment should accomplish its purpose by providing decision makers with the best quantitative information available regarding intended as well as unintended consequences of particular investments and alternatives, the means and costs to manage undesirable effects, and the consequences of taking no action.

- establish objectives and targets for environmental impact assessment
- provide for public and cross-sectoral involvement in assessments
- give NEMA the authority to promulgate regulations for environmental impact assessment, monitor their implementation and advise on their use
- require governmental entities at central, district and municipal levels to modify their decision making processes to incorporate environmental impact assessment and to identify and reconcile statutory, policy and regulatory conflicts with its implementation

It is further emphasised by NEAP that Central, district and municipal government entities will have to promulgate their own regulations in compliance with the NEMA regulations and make their recommendations to NEMA.

The "Draft Framework for Environmental Impact Assessment in Uganda" from May 1993 issued by NEAP introduces a very ambitious system for EIA for all policies, plans and projects prepared in Uganda. As mentioned an EIA process with four levels of assessment is envisaged implying that a planned activity is categorized into one of the four levels depending on the anticipated environmental effects.

Virtually all activities discharging effluent to the aquatic environment are categorized as requiring either the most advanced (Environmental Impact Study - EIS) or the second most advanced (Environmental Impact Evaluation - EIE) level of assessment.

It is found that the ambitions of the NEAP proposal are very high compared to the present institutional capacity, and unlikely to be achieved within the short term. For instance, it would be a tremendous task to prepare EIEs for all small scale manufacturing industries as suggested by NEAP. Instead, it is proposed to let the requirement of an EIA depend on the magnitude of the pollution discharge applied for. In this way it can be assured that the most significant contributors to environmental pollution are assessed and also that the administrative system is not overburdened by a tremendously large number of EIAs.

As administrative and technical capacity in this field becomes developed and increased, the lower limit of pollution level, determining whether or not an EIA for a given planned activity should be performed, may be decreased in order to cope progressively in a more comprehensive way with environmental problems.

The responsibility for evaluating EIAs for activities anticipated to cause effect on other parts of the environment than the water resources should lie with a cross-sectoral body (be it NEMA or another body), being advised by sectoral experts' input. DWD should provide a recommendation for decisions as to the water-related parts of the activity. DWD cannot, of course, be responsible for general environmental impact assessments.

- background for the inclusion of water resources consequences in the final prioritisation of development projects (made by MFP, district development committees or municipalities)
- background for developing modifications of technical design of development projects with the purpose to protect the water resources (required by WPC/DWD/NEMA)

Capacity for making and overseeing water resources impact assessments should be build up within DWD, but the actual assessments should not necessarily always be made by the directorate itself. E.g. line ministries, districts, municipalities or private companies may undertake the task either themselves or through private consultants. Detailed procedures should be developed (coordinated with the development of EIA procedures within NEAP), for when and how the assessments should be made (see Action 28, Annex 19).

In addition to identifying and describing impacts which a proposed programme or project would cause on the water resource if no management measures were included, it should:

- specify the necessary measures to protect the water resource and
- ensure that these are included in the project implementation plan

Furthermore, the impact assessment should place emphasis on:

- reliable assessments of disturbances likely to result from the proposed project
- reliable field data on the background conditions *
- validated relationships between different components of the aquatic environment
- consideration of impacts on all targets considered sensitive or critical under the prevailing conditions including derived socio-economic effects

Finally, evaluations of water resources impacts and technical and economic feasibility should be linked up so that effective project modifications and water resources management can be developed. Water resources aspects and economic evaluations should be linked to ensure that both water resources benefits and losses of the project as well as the costs of water resources management are accounted for in a cost-benefit analysis.

The operational functions of the water resources impact assessment in the Ugandan context should thus be to provide:

- background for approval or rejection of water abstraction/waste water discharge permit applications (given by WPC/DWD)
- background for inclusion of operation conditions in water abstraction/waste water discharge permits (given by WPC/DWD)
- input to Environmental Impact Assessments (evaluated by NEMA)

* Actually, water resources data on background conditions are very scarce in Uganda. A project aiming at building capacity for providing such data has been proposed - see WAP document no. 002.

5 UPDATING AND COORDINATION

A substantial number of already planned or ongoing development projects are related in various ways to the water resources (see Chapter 2).

The integration of water resources issues in the prioritisation process, makes it necessary that tools and procedures exist for securing adequate exchange of information between the project preparing bodies, the water resource authorities and the final decision makers.

In short the requirements are that:

- information about new proposals for projects which may impact or imply specific requirements to the water resources should reach WPC/DWD in due time for elaboration of impact assessments and recommendations before final decisions are taken including considerations of potential alternative exploitation of the involved water resource
- WPC/DWD should possess rapid access to relevant information about registered planned and ongoing water related projects through adequate database tools

5.1 Coordination

5.1.1 Government development projects

New Government projects will normally be defined continuously within the various line ministries and after technical preparation there, they are forwarded to the Ministry of Finance and Planning where they are subject to a screening in the Development Committee to assure that scarce investment funds are allocated to the highest priority use. As of now, one of the most important criteria employed is the economic viability of projects.

It is proposed that each project proposal in the future, at an early stage, will be subject to an initial screening identifying if the project is likely to have water resources related implications. It is further proposed that WPC/DWD receive information about any project proposals which the line ministries consider relevant even at the stage before they reach the MFP to secure that any potential exploitation of a given water resource can be included in evaluations of new projects. Finally, it is proposed that the process of detailed evaluation/impact assessments, which may be relatively costly, is not initiated before MFP has considered the particular project viable for other reasons.

Such a coordination could be obtained through the following procedures:

- an officer within each line ministry undertakes an initial screening of upcoming projects in the ministry. This officer should possess guidelines made by DWD for determining if projects have water resources implications. He should also be liaison officer to DWD, and could be a part of the proposed (NEAP) environment office in the respective ministries
- if the officer makes a preliminary assessment that the project is relevant to water resources, a reference should be made to WPC/DWD that further water resources considerations (or EIA to NEAP/DWD) will be necessary, and standardised information about the project should be forwarded to DWD
- if the Development Committee of Ministry of Finance and Planning considers the project viable, WPC/DWD are consulted for impact assessment and/or recommendations for design improvements

To ensure that all public projects are adequately screened for possible water resources implications, the DWD should possess a currently updated list of all core projects included in the Rehabilitation and Development Plan at MFP.

5.1.2 District Council project proposals

District Councils will, under the decentralisation process initiated by Government, have their own block grants which they can allocate to projects according to their own priorities and without the intermediation of the central Government. In cases where projects have water resources implications, procedures should mirror those carried out at central government level. After the relevant district council planning officer has been ascertained (based on DWD guidelines) that a project has water resources implications, reference should be made to the DWO, who will consult with DWD. Also here, information about such projects should be forwarded DWD in standardised format.

5.1.3 Private sector proposals

Proposals which are made by the private sector obviously do not go through the public sector selection process (MFP). Most pressure on water resources from private projects is likely to be felt in urban areas, which create particularly high levels of demands and impacts. Projects will therefore often be evaluated according to town plans, and the

municipal authority should pass information on water related projects to DWD as well as possible requests for detailed evaluations.

Private sector project proposals in rural areas which have water resources implications will not normally fall under the area of coverage of a physical plan, and the appropriate place to resolve competing demands for a finite or vulnerable water resource is the District Development Committee. Once again, the DWO will be responsible for the coordination with DWD if necessary.

5.2 Project Database

It was found during the Water Action Plan Project - Phase I, that a database containing relevant information on water resources related development projects in Uganda would be an important tool for the cross-sectorial coordination, and thereby for the final prioritisation of projects.

the database shall facilitate WPC/DWD in providing the Ministry of Finance and Planning with the necessary background regarding water resources implications of development projects for decisions on prioritisation. A database should therefore provide the following:

- DWD overview of existing and upcoming projects and their implications for the water resources
- easy identification of e.g. projects involving particular water resources or operating in particular catchments or districts
- easy identification of current and future requirements to water resources for planning purposes
- budgeting background

The information requirements to such a project profile database as well as the links to other databases and relevant sources of information was assessed during the Water Action Plan work. A first version of the database has been implemented on the computers at DWD.

As the Ministry of Finance and Economic Planning already had developed a project database registering more than 300 priority development projects, the project profile data base should obviously link closely to this i.e. follow similar formats and be able to exchange data with it easily.

The database in MFP is publicised in Rehabilitation and Development Plan (RDP) 1991/92 - 1994/95, and includes all sectors i.e. agriculture environment protection, manufacturing, mining and energy, public administration, social infrastructure, (incl. water), transport and communication and tourism and wildlife. Registration is made primarily in order to plan and manage effectively the allocation of public funds. As a part of the registration project profiles are provided from the line ministries, and the publication includes these as well as economic implications of the projects. Unfortunately the project profile information is not currently in a proper digital form implying that it is not easily transferable to a computerized database system.

A system which can be used for the above mentioned purposes will furthermore require some changes in the current handling of project information. First a standard format for reporting information on up-coming projects and changes in ongoing projects to DWD should be introduced. The format shall reflect the fields of the database which are:

- 1 Sector(s) *
- 2 Subsector *
- 3 Code *
- 4 Title *
- 5 District(s)
- 6 Location *
- 7 Catchment(s)
- 8 Involved water resource
- 9 Type of water resources implication (e.g. abstraction, pollution, hydraulic structures etc)
- 10 Implementing agency *
- 11 Start of project (year)
- 12 Completion date (year) *
- 13 Total future costs *
- 14 Funds secured *
- 15 Funding gap *
- 16 Keywords describing the project
- 17 Objectives **
- 18 Technical description **
- 19 Financing **
- 20 Feasibility studies **
- 21 Plan of operation **
- 22 Monitoring report **
- 23 Detailed description of the water resources implications

* indicates fields already existing in the RDP database.

** indicates information given in RDP project profiles (but not included as fields in the RDP database)

The database should be updated according to the information flow indicated in Section 4.1, implying that line ministries, districts or municipalities reports to DWD project information office when the projects are identified. Hereafter, the information about the particular project should be yearly updated. As the format is very close to the RDP database format the same reports can be forwarded to MFP.

5.3 Implementation of a coordinated project information system

Though the project profile database has been established during the Water Action Plan Project, it has been realised that project information does not currently exist in a proper form for transferring it to the database, and it is therefore not operational yet. The implementation of the entire project information system will require that the following activities are carried out (Actions nos. 26A and 26B in Annex 19):

- trained officers responsible for water resources aspects of development projects shall be in place within line ministries
- detailed guidelines for screening of projects for water resources implications should be in place
- standardized form for reporting project information should be introduced at the sources for information i.e. line ministries, District Water Officers and municipalities
- project profile information should be stored in database format in the RDP database
- DWD staff shall be trained in the use of the project profile database

6 PRIORITISATION OF WATER RESOURCES RELATED DEVELOPMENT PROJECTS

6.1 Introduction

It is one goal for the Water Action Plan to ensure that the overall prioritisations of development projects in Uganda includes water resources implications in a way that the decision makers are fully aware of the consequences of their choices and that the water resources impacts and their derived effects are given a sufficient weight among other economic and social factors in the decision process.

The final prioritisation of development projects is a political task which should be made on the basis of a project analysis taking fully into account the various positive and negative impacts including short term and long term national-economic effects, socio-economic effects, prioritised exploitation of natural resources, environmental consequences etc. This kind of project analyses as well as recommendations for prioritisation should be made in cross sectoral bodies such as the development committees of Ministry of Finance and Economic Planning (for central Government projects) and of the districts and municipalities (for local public and private projects). The role of water resources management authorities as well as sectoral line ministries in this respect should be to propose policies for resource exploitation and sectoral development and to provide sufficient information about up-coming projects so that decisions can be made according to the adopted policies.

In the preceding chapters a number of tools and procedures for providing such information have been described. In the following are given guiding principles for the decision process itself. The proposed guidelines follow the intentions laid in the water resources policy proposed in WAP document 006.

6.2 Water as a social and economic good

One of the guiding principles for the Water Action Plan is that water should be considered as a social and economic good, with a value reflecting its most valuable potential use.

In order to encourage conservation and protection, this implies that the true economic value of water resources should always be taken into account when prioritizing potential uses - without infringing the right of all people to have access to clean water at affordable prices for basic domestic consumption.

Recognition of water as a social and economic good means that water is not considered a free commodity, but rather a valuable resource, which should be used in the best national interest. Using water for one specific purpose means that other opportunities may be lost. In the evaluation of which uses are most desirable, the use which yields the largest socio-economic benefit should be considered as having first priority (see also Annex 14, Chapter 5).

6.3 Project analysis and prioritisation

As of now, central government projects are subject to individual project analyses made by the Ministry of Finance and Economic Planning resulting in a prioritisation of projects into core and non core projects according to a number of economical and technical criteria (see Chapter 2 of this annex). At the local level i.e. districts and municipalities there are presently no common criteria for project prioritisation. In addition to the project analysis and prioritisation procedures already used in these bodies, criteria regarding possible water resources implications should be included for projects where such implications are significant.

Thus, when a project during the initial screening (see Chapter 5 of this annex) has been identified to imply important water related aspects, the water resources implications should be incorporated in the overall project analysis and the subsequent prioritisation by the relevant authorities, which on the other hand should be provided all necessary information for making the decisions. This information will mainly consist of water resources impact assessments and/or environmental impact assessments made or approved by WPC/DWD or NEMA, but may also include information about possible project specific requirements to the water resources i.e. if and how they are likely to be fulfilled and possible economic consequences of fulfilling such requirements.

The assessments of water resources implications should be included in the following elements of the overall project analysis:

- economic impact
- social/cultural impact
- technical factors and sustainability
- institutional and managerial, and
- environmental impacts.

In the following sections recommendations are made for the prioritisation of water related projects according to these aspects. In Uganda water resources are relatively abundant, but problems of environmental damage and competing demands for limited water resources do occur at certain locations and times of year (ref. Rapid Water Resource Assessment, WAP Doc. 007 and District Studies, WAP Doc. 010). However most water related activities will not be affected by limitations if the projects are designed according to recommendations from proper water resources assessments. Prioritisation will be necessary in cases where different potential uses are proposed for a limited resource, either it is limited due to quantity or quality requirements.

6.3.1 Economic Criteria

As mentioned, the prioritisation of water related development projects should reflect the fact that water is a limited resource and that it should be regarded as a social and economic good with a value representing its most valuable potential use. Consideration of the total costs of water, defined as the sum of direct costs, environmental costs and opportunity costs, is discussed in "Background for regulations" (Annex 14, Chapter 5, WAP Doc. 012).

Thus, in cases where priorities should be given two or more projects due to water resources limitations, an economic analysis is required to ascertain which of the projects will contribute most to the national and/or local economy, with projects ranked accordingly. Standard economic cost benefit analysis including the opportunity cost derived from the alternative uses of the water resource, should be undertaken. This analysis is valid where the project benefits can be quantified, and this would apply to most water consuming projects.

The cost benefit analysis of projects which impact the quality of the water resource by e.g. pollution discharges should include environmental costs as e.g. the costs of introducing waste water treatment or cleaner technology to meet effluent standards accepted by DWD. In other cases such as projects for crop production and tick control, direct costs for using feasible methods or technologies reducing the quality impacts on the water resources should be taken into account. If the resulting pollution, after reasonable abatement measures are introduced, still reduces the utility for other relevant uses of the same resource, these lost opportunities should be included in the economic analysis as opportunity costs.

Projects for which the quantification of benefits do not apply to standard economical analyses are e.g. domestic water supply and sanitation and environmental protection/restoration projects. For these two categories of projects, valuation of project benefits is either impossible or very complex.

For domestic water supplies it is very difficult to impute an economic value to water given its life sustaining function. However, water supplies for basic domestic consumption are generally accorded the highest, but unspecified, economic value reflecting the priority of basic human needs.

Where cost effectiveness analysis is being used, and this is especially relevant for domestic water supply projects, the least cost project should be ranked high. The analysis would include both capital and operating costs discounted to a Net Present Value to arrive at one overall cost which can be used in comparing different project options.

For projects aiming at environmental protection or restoration, the quantification of benefits may be difficult if the purpose for which the water will be used is not known. For this type of projects, priority must be given according to adopted environmental policies

and plans. Cost effectiveness analysis can furthermore be applied when prioritising projects with similar goals in this category. Such analysis assumes that the project will achieve certain unquantifiable benefits and the analysis focuses on the least cost method of obtaining them.

First priority in water resource allocation should, according to the above arguments, be given to domestic water supplies (see also the proposed water resources policy WAP Doc. 006). This will include the demand both for the existing population and also for the estimated future population.

Subsequently, opportunity cost analysis considering the economic value of water in different uses can be used in arriving at project priorities. The economic value of water will normally be estimated highest in industry, followed by livestock, aquaculture and irrigation. Irrigation water used by plants is lost in evapotranspiration in contrast to many other uses, where it may be used and possibly returned to the source more or less polluted. Irrigation of low value cereal crops using large quantities of water usually provides the lowest economic value of water.

Hydropower generation has a high economic and social value, but the way it is practised in Uganda (Owen Falls) it is not consuming or regulating the water resource and will therefore not compete with other uses.

6.3.2 Social Impact

When prioritising different uses of a limited water resource, there are also a number of important social criteria to examine. These include:

- the number of project beneficiaries, and their social and economic status,
- whether special categories of people are included or affected, - disadvantaged, minority groups, refugees, the elderly, landless, etc.
- income distribution effects of the project, if any,
- changes in social situation within the benefitting community arising from the project,
- whether the project affect local culture and traditions
- whether the project affects access to land and water resources,

It is realised, that the assessment of these and other aspects is difficult compared to other project evaluation parameters, it should however, be ensured that social impacts or benefits contribute to the final priority ranking of water related projects.

6.3.3 Technical Factors and Sustainability

Both the water resource itself and the technology used for e.g. water resources protection should be sustainable over the long term. If, for instance, water is being extracted from groundwater then the aquifer must be replenished so that the water level remains unchanged over the long term i.e. safe yield should not be exceeded. Furthermore, if an activity initiated by a project will be dependent on technological measures for continuous protection of a water resource e.g. waste water treatment plants, the used technology and management procedures must be proven sustainable in the long term.

For prioritisation of projects this implies:

- Unsustainable exploitation of water resources should be avoided
- activities implying unsustainable technology and operation procedures for protecting the water resource should be avoided
- activities requiring none or simple measures for protecting the water resource should contribute to a high ranking of the project
- activities requiring complicated measures for protecting the water resource should contribute to a low ranking of the project

6.3.4 Institutional and Managerial Assessment

If a project or programme implies significantly increased resources allocation for management of the involved water resources e.g. by implying a high number of permits to be issued, high level of control and costly reassessments, the costs for these functions should be included in the project analysis. The actual and future institutional capacity for fulfilling such functions should equally be a prioritisation parameter so that:

- activities for which the necessary management functions for protecting the water resources exceeds the likely actual and near-future institutional capacity should be avoided

- activities requiring none or simple management functions for protecting the water resource should contribute to a high ranking of the project
- activities requiring complex and resource demanding management functions for protecting the water resource should contribute to a low ranking of the project

A special kind of water related projects which are of essential importance to water resources management and thereby also to the validity of water resources impact assessments used in the prioritisation process are research, survey and capacity building projects including water resources data collection and enhancement of knowledge. The availability of water resources information is presently very scarce, implying that the basis for water resources impact assessments and environmental impact assessments will be relatively weak for a substantial period. Therefore projects which imply significant collection of relevant water resources data and which will provide increased knowledge about the Ugandan water resources need promotion.

6.3.5 Environmental factors

In cases where a project or programme is likely to have significant impacts on the environment NEMA will, based on the Environmental Impact Assessment (see Chapter 4 of this annex), define the acceptable impacts as well as the conditions for implementing the project or programme. Provided that competing projects are deemed feasible according to environmental issues, the resulting environmental impact should still be a parameter for prioritisation. I.e. the environmental aspects should contribute to the overall ranking of the project depending on the degree of environmental impact (defined by NEMA priorities).

6.4 Results and requirements

The results of introducing the above guiding principles in the overall planning and prioritisation of development projects in Uganda will be to place the highest possible emphasis on the following aspects:

first priority to be given to providing water of adequate quantity and quality to meet basic domestic needs

the allocation of water to meet the needs of irrigation, livestock, industry and other demands, will be made considering the economic, social and environmental values of water

- the planning of water use will be based on the sustainable yields of water sources
- the planning of water use will be based on realistic requirements for management and control
- the planning of water use will focus on minimizing pollution and other environmental impacts

The prerequisites for introducing a project prioritisation taking properly into account the water resources policy will be the implementation of water resources information systems, the implementation of assessment procedures and the introduction of project information tools and coordination procedures as described in the previous chapters.

The application of the above guiding principles for prioritisation of water related development projects in Uganda requires capacity building and training in project analysis at both central (WPC/DWD) and district/municipality levels. In addition to capabilities in general feasibility analysis of such projects, specific skills in estimating the total costs of water (direct, environmental and opportunity costs) need to be developed, particularly in areas characterised by potential environmental damage and/or competing demands for water.

ANNEX 18
PROJECT PROFILES

PROJECT PROFILE

<u>Sector</u>	Agriculture
<u>Sub-Sector</u>	Crops
<u>Code</u>	AG 07(A) [formerly AG 82 N]
<u>Title</u>	Olweny Rice Irrigation Scheme
<u>Implementing Agency</u>	Ministry of Agriculture, Animal Industry & Fisheries
<u>Location</u>	Lira District
<u>Total Future Cost</u>	US \$ 14.60m
<u>Total Plan Exp.</u>	US \$ 5.10m
<u>Funds Secured</u>	US \$ 14.52m
<u>Funding Gap</u>	US \$ 0.08m
<u>Completion Date</u>	1997

Objectives

- i) To increase food grain production and, in particular, achieve self-sufficiency in rice.
- ii) To increase rural incomes and employment.

Background

Rice is grown as a cash crop. As domestic demand for rice has risen with changes in consumer diet, rice cultivation has expanded over the years. The area under rice in 1990 was estimated at 44,000 ha producing about 62,000 tones. Yields vary greatly between smallholder cultivation and the favorable conditions of irrigation schemes. Organized rice farming is carried out by the Kibimba Rice Company, the Doho Rice Scheme and the Olweny Swamp Rice Irrigation Project at Lira. The first two projects were assisted by the Chinese Government and have been completed, although area expansion through small farmers participation may take place in the near future. GoU is implementing Olweny Swamp Rice Irrigation Project, which is expected to produce an estimated 5,000 - 7000 tones of rice per annum.

Technical Description

The project, when fully developed, will cover 800 hectares of which 120 hectares will be for research, demonstration and seed multiplication, and 680 ha will be allocated to small holder farmers. Farmers will grow rice using the project irrigation system.

Financing

The total cost of this project is US\$ 25.4m, to be financed over a 6 year period as follows:

i)	Government of Uganda	US\$ 4.01m
ii)	ADB	US\$ 17.00m
iii)	IDB	US\$ 4.37m
	TOTAL	US\$ 25.38m

Feasibility Studies

In 1986, a feasibility study financed by the African Development Bank established the viability of the project and estimated that at 1987 prices, farmers participating in the scheme would earn substantial income. Unfortunately project implementation was delayed and as a result costs have escalated rendering the project unviable in its original design. In order to reduce costs, in May 1993, ADB and GoU decided that the fields will be irrigated by gravity instead of pumped water. A technical study is yet to be done to confirm this change.

Plan of Operation

Technical feasibility studies will be conducted at Itek, some 10 km upstream to establish the details of gravity irrigation for the project. The 50 ha nucleus farm which consists of research, variety trial plots, training and rice seed multiplication will remain at Agwata, the original site. Work on the associated infrastructure will continue and improvement on the rice variety trial plot will be made.

Monitoring Report

The experiments on the 2.5 ha rice variety plot have shown that upland rice is suitable for the area. Pest control activities have discovered the presence of the gall midge pest. Tenders for the construction of houses and other structures at the nucleus farm have been awarded and work will commence during the year.

PROJECT PROFILE

Sector	Agriculture
SubSector	Crops
Code	AG 21(A) formerly AG 09(5)}
Title	Banana Cropping Systems
Implementing Agency	NARO
Location	Nationwide
Total Future Costs	US\$0.42m
Total Plan Exp.	US\$0.42m
Funds Secured	US\$0.35m
Funding Gap	US\$0.07m
Completion date	Unknown

Objective

To restore food self-sufficiency and maintain the cultivated hectareage as well as improve the productivity of the present banana stands.

Background

Uganda has the largest banana germplasm in the world and yet this resource is not exploited to the full because of two main hindrances. Firstly, germplasm has never been fully characterized, and utilization and/or research is often hindered by a high degree of cultivar synonyms. Secondly, the germplasm has not been evaluated in order to release its full genetic potential. In the face of devastating diseases such as Black Sigatoka and Panama Wilt, germ plasm evaluation is extremely urgent. This evaluation should also involve germplasm selected elsewhere against diseases and pests found in Uganda. Farmers have been forced to replant every 5-10 years. Both the change from bananas to root crops and increased frequency of replanting has exposed soil to erosion and oxidative insolation with a consequent drop in yields. In 1986/87 there was widespread toppling of bananas in the key production areas of Masaka, Mbarara and Bushenyi. This was attributed to weevils and nematodes and the unscrupulous use of pesticides. By 1988 food security was threatened, especially with the confirmation of the existence of Black Sigatoka in 1989. GoU with the assistance of IDRC and the Rockefeller Foundation initiated an intervention programme.

Technical Description

1. Carry out characterization and evaluation of the 200 cultivars which have been assembled at Kawanda Agricultural Research Institute.
2. Biological control of banana weevil.
3. Study the interaction effects of soil fertility and disease/pest relationships.
4. Crop loss assessment studies.
5. Banana Cropping Systems Analysis.
6. Post harvest handling and losses studies.
7. Training and workshops.

Financing

Funding has been provided by IDRC and Rockefeller Foundation.

Feasibility Studies

No specific feasibility studies have been carried out.

Plan of Operation

Characterization and evaluation of cultivars will be done at the research station. Other activities will be carried out both at research stations and on the plantations of farmers. Such activities will include biological control of banana weevils, interactive effects of soil fertility and disease/pest relationships, Crop Loss Assessment and Systems Analysis. Training of both staff and farmers will be undertaken.

Monitoring Report

The project has completed the Rapid Rural Appraisal (RRA) and the Diagnostic Survey. The RRA was carried out between June and September 1991 and covered 25 villages. The objective of RRA was to obtain farmer's perceptions and management priorities as a basis for planning interventions. The Diagnostic Survey was to quantify the constraints identified in the RRA. An ex-situ gene bank is being maintained at Kawanda Research Institute and at Kabanyolo University Farm. Some preliminary characterisation has been done and clean suckers have been issued to individual farmers, women's groups and to NGOs.

PROJECT PROFILE

<u>Sector</u>	Agriculture
<u>Sub-sector</u>	Crops
<u>Code</u>	AG 25(A) (formerly AG 25)
<u>Title</u>	Cocoa Development Programme
<u>Implementing Agency</u>	Ministry of Agriculture, Animal Industry & Fisheries
<u>Location</u>	Nationwide
<u>Total Future Cost</u>	US\$1.10m
<u>Total Plan Exp.</u>	US\$1.10m
<u>Funds Secured</u>	US\$0.97m
<u>Funding Gap</u>	US\$0.13m
<u>Completion Date</u>	1996

Objective

To rehabilitate and develop the cocoa industry through research, provision of cocoa seedlings to farmers, training of extension staff and improvement of processing.

Background

The government is keen to reduce Uganda's over dependence on coffee which is currently contributing over 70% of foreign exchange earnings. Cocoa is an important crop in this diversification drive. At the moment there are over 14,000 hectares of mature cocoa crop in the country but yields from these farms are low. There is a further 30,000-40,000 hectares of land in the robusta coffee areas suitable for expansion of cocoa production. The immediate aim is to train farmers in improved technologies of growing and processing cocoa so as to increase the yield and quality in addition to the price incentives already in place.

Technical Description

Key project components include the following:

- i) In-field training of cocoa development project staff in all aspects of cocoa production and the upgrading of their extension abilities to transmit their technical knowledge effectively to cocoa producers;
- ii) Demonstrations in pruning, spraying and removal of weeds;
- iii) Demonstrations of on-farm processing of cocoa and identification of insect pests and their control;
- iv) Establishment of cocoa nurseries for cocoa expansion.

Financing

The GoU will finance local costs. Donors are expected to include UNDP who have already financed the preparatory assistance phase.

Feasibility Studies/Reports

Two economic feasibility studies were carried out in 1988 and both show a high profitability potential for cocoa production. An IDA financed consultant's report entitled "Prospects for Non-traditional Exports" listed cocoa as one of the high priorities for increased export earnings (up to US\$ 18m per annum after project completion).

Plan of Operation

The activities of the project will be carried out in the following sequence:

- i) Training of trainers in all aspects of cocoa production.
- ii) Revising cocoa research activities.
- iii) Introduction of improved cocoa planting materials.
- iv) Opening of more cocoa nurseries.

Monitoring Report

An estimated 12,300 hectares has been raised during 1992/93. So far the set target has not been achieved due to cash flow constraints.

PROJECT PROFILE

<u>Sector</u>	Agriculture
<u>Sub-sector</u>	Livestock
<u>Code</u>	AG 13(A)
<u>Title</u>	Dairy Development Project
<u>Implementing Agency</u>	Ministry of Agriculture, Animal Industry & Fisheries
<u>Location</u>	Countrywide
<u>Total Future Cost</u>	US \$ 4.50m
<u>Total Planned Exp.</u>	US \$ 4.50m
<u>Fund Secured</u>	US \$ 4.41m
<u>Funding Gap</u>	US \$ 0.09m
<u>Completion Date</u>	1994

Objectives

- i) to rehabilitate the Dairy Corporation plant at Kampala and milk collection centers;
- ii) purchase of farm inputs;
- iii) rehabilitate three department farms (Rubona, Njeru, Nshara).

Background

Prior to 1971 the dairy industry was well developed and largely met the local demand for milk. This position was reversed in the 1980s and the country had to increasingly depend on imported, powdered milk. At present efforts are being put into the rehabilitation of the milk collection, processing and distribution activities operated by the co-operatives and the Dairy Corporation. More support is needed in the rehabilitation of artificial insemination services, research on the breeding stock, revival of research and extension services and control of endemic diseases. Attention must also be paid to other major constraints faced by the dairy farmer including low milk yields, inadequate water supply, overgrazing and inadequate forage and animal feeds. Uganda's dairy industry has the potential to meet the country's growing demand for milk and milk products and this potential should be exploited.

Technical Description

The main components of the project include:

- i) Support to AI services;
- ii) Transport for dairy extension staff;
- iii) Provision of farm inputs and supplies to dairy farmers;
- iv) Rehabilitation of Njeru stock farm, Rubona stock farm and Nshara dairy crossbreeding ranch;
- v) Training and Technical Assistance.

Financing

All major activities are funded by ADB.

Feasibility Studies

Euro-consult carried out a dairy development strategy study and Danida sponsored a dairy master plan study, whose final report came out in June 1993, on the basis of which it is supporting the industry.

Plan of Operation

During the plan period major activities will involve rehabilitation of the physical infrastructure, notably water supply, land development and rehabilitation of buildings. Fencing of paddocks, bush clearing and re-connection of electricity will be undertaken.

Monitoring Report

Kampala dairy processing plant has been partially rehabilitated but still needs major repairs and replacement of most machines. 2 Veterinarians have completed Ph.D training and 2 others have trained to M.Sc. level. Vehicles, farm inputs and barbed wire for fencing have been procured by the project. Njeru and Rubona stock farms have been fenced and dips have been completely repaired.

PROJECT PROFILE

<u>Sector</u>	Agriculture
<u>Sub-sector</u>	Livestock
<u>Code</u>	AG 16(A) [formerly AG 16]
<u>Title</u>	Rehabilitation of the Beef Industry
<u>Implementing Agency</u>	Ministry of Agriculture, Animal Industry & Fisheries
<u>Location</u>	Country wide
<u>Total Future cost</u>	US \$ 4.46m
<u>Total Plan Exp.</u>	US \$ 4.46m
<u>Fund Secured</u>	US \$ 4.34m
<u>Funding Gap</u>	US \$ 0.12m
<u>Completion Date</u>	1994

Objectives

To increase beef production by rehabilitating two ranches in Masindi District, restocking ranches and upgrading local breeds.

Background

During the 1960s the Government instituted policies aimed at improving livestock production and controlling animal diseases. About 400 commercial ranches were developed in extensive areas of unoccupied land cleared of tsetse fly and were released to individuals, cooperative societies and companies. These ranches deteriorated during the 1970s and became depleted of stock. It has been the policy of the NRM Government to reverse this trend and rejuvenate the beef industry.

Technical Description

A loan was secured for the following activities:

- i) restocking of two ranches with improved imported breeding cattle;
- ii) provision of transport;
- iii) improving infrastructure such as water supply, forage development and fencing.

Feasibility studies

The project was formulated by Australian consultants and a UK firm carried out a financial study and recommended the rehabilitation of commercial ranches. Re-appraisal was carried out in February 1990 by the Kuwait Fund and GoU.

Financing

The Kuwait Fund extended a US\$10.2m loan. Australia and ADB also provided finance.

Plan of Operation

It is envisaged that high quality Boran cattle bulls totalling to 2300 heifers and 25 bulls will be procured. These would be multiplied and sold to farmers and ranchers who will increase production of high quality beef for both local consumption and export.

Monitoring Report

During 1992/93 the project continued to rehabilitate Kyempisi and Kiryana ranches. The first consignment of 210 Boran Heifers and 15 Boran Bulls were delivered at Kiryana Ranch in February 1993 and the supplier was paid from the Revolving Fund. The second consignment of cattle arrived in March 1993. Implementation of the project was stalled due to the borrower's inability to service the loan promptly. Bank of Uganda has recently improved on loan servicing and this may improve on the situation in the coming financial year.

PROJECT PROFILE

<u>Sector</u>	Agriculture
<u>Subsector</u>	Fisheries
<u>Code</u>	AG 11 [formerly AG 47]
<u>Title</u>	Fisheries Research Programme
<u>Implementing Agency</u>	Ministry of Agriculture, Animal Industry & Fisheries
<u>Location</u>	All lakes in Uganda
<u>Total Future Cost</u>	US \$ 1.78m
<u>Total Plan Exp.</u>	US \$ 1.77m
<u>Funds Secured</u>	US \$ 1.55m
<u>Funding Gap</u>	US \$ 0.23m
<u>Completion Date</u>	1995

Objectives

- i) To determine the stock of the various fish species in all lakes;
- ii) To strengthen fish research facilities;
- iii) To conduct fisheries research and collect fisheries data.

Background

The fishing industry provides about 30% of Ugandans' protein intake. There are various species of fish in the country, but the population of each species is not known. To draw up future fisheries development programmes to exploit the fisheries resources, a fish stock assessment and inventory survey is needed to determine the size of each fish species in each lake. This knowledge will then be used to expand the current fish factories, the Masese Fish Factory and the Kampala Ice Plant, as well as for regulating the catching and marketing of fish.

Technical Description

The Fisheries Research Programme comprises 5 on-going projects which are implemented by Uganda Fresh Water Fisheries Research Organization (UFFRO).

- i) AG 11(A) -Regional Fisheries Project: financed by EEC, with the aim of assessing the fish stocks of Lake Victoria. This project started during 1989/90 and was expected to phase out in 1991/92. However EEC has expressed willingness to continue financing it from Regional Funds for the period 1993/94 and 1994/95.
- ii) AG 11(B) -Nile Perch Project: financed by IDRC, with the objective of studying the biology and ecology of Nile Perch. The project started during 1989/90 and was expected to end in 1991/92. IDRC continued to finance it through 1992/93 and now major project activities are due to end in 1993/94. The project covers the three lakes (Victoria, Kyoga, Albert) where the Nile Perch is present.
- iii) AG 11(C) -Lake Productivity Project is also financed by IDRC and covers Lakes Victoria, Kyoga and Albert. The project aims at assessing the limnology of those lakes including primary productivity and biomass potential. This project started in 1990/91 and major activities were due to end in 1991/92. However, more funds have been secured from IDRC to cover the period up to 1994/95 when major project activities will end.
- iv) AG 11(D) -East African Great Lakes Project. This had been expected to be a one year study, starting in 1991/92, with the major aim of investigating the socio-economic benefits to fishermen, fishmongers and consumers of the changing fishing patterns and the changed fish species in Lake Victoria. Because of the magnitude of the work IDRC has continued its funding up to 1993/94 when major activities will end.
- v) AG 11(E) -Fish Commodity Systems Economics (U) Project. The Project is financed by IDRC. The agreement was signed in March 1992, though major activities did not start until November 1992. Other than strengthening research activities, this 3 year project aims at identifying and characterizing the different interest groups that participate in the fisheries subsector. It will quantify the present and future contribution of the Fisheries Subsector to GDP, employment, income, foreign exchange and diet in Uganda.

Financing

The Programme is funded by EEC, IDRC, the MacArthur Foundation and GoU. To date EEC, IDRC and MacArthur Foundation are the major foreign financiers, with GoU contributing towards recurrent costs.

Feasibility Study

Apart from the on-going activities mentioned above other studies have been undertaken. The project is being supplemented by AG 43(A), a UNDP project on Fisheries Statistics and Information System.

Plan of Operation

The programme has been carrying out fisheries surveys to determine the size of each fish species in lakes nationwide. This is likely to continue during 1993/94. Socio-economic studies will be conducted with a view to assessing the contribution of the Fisheries Subsector to the economy.

Monitoring Report

During 1992/93 the EEC funded the renovation of the research vessel, Ibis. A number of socio-economic surveys were conducted nationwide, especially under project AG 11(E).

PROJECT PROFILE

<u>Sector</u>	Agriculture
<u>Sub-sector</u>	Fisheries
<u>Code</u>	AG 35(A) [formerly AG 93(N)]
<u>Title</u>	Eradication of Water Hyacinth
<u>Implementing Agency</u>	Ministry of Agriculture, Animal Industry & Fisheries
<u>Location</u>	Lakes Kyoga, Victoria and River Nile Basin
<u>Total Future Cost</u>	US\$ 0.45m
<u>Total Plan Exp.</u>	US\$ 0.45m
<u>Funds Secured</u>	US\$ 0.31m
<u>Funding Gap</u>	US\$ 0.14m
<u>Completion date</u>	Unknown

Objectives

The project aims to exterminate water hyacinth from Ugandan waters.

Background

Uganda is endowed with large water-bodies which have rich stocks of fish. During the late 1980s it was discovered that Water Hyacinth (*Eichhornia Crassipes*) had invaded and was fast colonising the water systems, especially Lakes Victoria, Kyoga and River Nile. It is feared that if left uncontrolled it may soon cover the entire water-bodies. The reduction in oxygen levels in waters would lead to large numbers of fish dying of asphyxiation; besides the accumulation of the weed in the waters shall contribute to enhanced eutrophication. The floating nature of the weed also interferes with fishing and navigation on the affected water-bodies.

Technical Description

A 1991 FAO study favours biological control as an effective method to reduce the spread of water hyacinth. However, it also recommended that the effectiveness of this method is likely to be enhanced by integrating it with site-specific mechanical or chemical methods.

The Fisheries Department of MAAIF supervises the operation of removing and burning the weed on land. In addition, fishing communities will be mobilised by the RCs to assist in the collection of water hyacinth on a self-help basis.

Financing

During 1992/93 GoU financed all the project activities. FAO has pledged to supplement GoU efforts by allocating US\$193,000 for "Water Hyacinth Control in East Africa". It is hoped that this project will contribute to the formulation of a long-term project for the establishment of a sound water hyacinth control programme to be financed by various donors.

Feasibility Studies/Reports

FAO financed a three month study in 1991 under its Technical Cooperation Programme. The report highlights the urgency of putting in place an effective measure to control the weed.

Plan of Operation

The Fisheries Department of MAAIF will continue to supervise the manual operation of removing the weed from Lakes Victoria, Kyoga and River Nile this year. GoU will meanwhile continue to interest donors in funding the project.

Monitoring Report

During 1992/93 the Fisheries Department of MAAIF sensitised the local population in fishing villages, especially on the shores of Lake Victoria, to volunteer in the manual removal and burning of the weed. GoU purchased equipment (computer and assorted hand tools) for use by the project.

PROJECT PROFILE

<u>Sector</u>	Agriculture
<u>Sub-sector</u>	Fisheries
<u>Code</u>	AG 47(A)
<u>Title</u>	Lake Victoria Regional Management
<u>Implementing Agency</u>	Ministry of Agriculture, Animal Industry & Fisheries
<u>Location</u>	Lake Victoria
<u>Total Future Cost</u>	US\$ 6.04m
<u>Total Plan Exp.</u>	US\$ 2.94m
<u>Funds Secured</u>	Nil
<u>Funding Gap</u>	US\$ 6.04m
<u>Completion Date</u>	Unknown.

Objective

To execute fisheries research on Lake Victoria and to ensure discipline in its water management.

Background

This project was developed in order to strengthen the research capabilities of the Fisheries Research Institutions of Uganda, Kenya and Tanzania so that they could become capable of obtaining the needed research information for the management and development of the Lake Victoria Fisheries. Lake Victoria is an important fishery resource. Though the total commercial fish yield from the lake has been increasing, especially during recent years, it is not yet clear whether the optimum potential fish production has been realised. This is a result of lack of adequate scientific knowledge on present fish stocks.

In addition to the fisheries component, Lake Victoria has other uses of national and regional significance. They include industrial and urban developments along the lake shores, other agricultural activities, transport, etc. These, however, have not been properly planned and, as a result, there has been widespread deforestation and consequent soil erosion in the lake watersheds, pollution from agricultural pesticides and fertilizers in the run-offs, and eutrophication from industrial and domestic effluents. There is also mismanagement of the fringe wetlands and their reclamation for agricultural use. These have both direct and indirect effects on the lake environment and fisheries.

There is, therefore, a need for collaborative research among the three riparian states for proper utilization and management of the Lake Victoria fisheries.

Technical Description

While the fish species diversity in Lake Victoria has dramatically declined, the total annual fish yield has substantially increased. The project will investigate whether the changes are short-lived or sustainable, for long-term planning. Current commercial fishing is dominated by three species, namely the introduced predatory Nile Perch, the introduced mainly herbivorous Nile Tilapia and the indigenous dagaa (*Rastrineobola Argentea*) which feeds mainly on invertebrates. There is a need to establish proper levels and suitable patterns of exploitation. Also for the benefit of consumer preferences, it is desirable to assess the possible fate of the species that have declined.

The project will investigate water pollution and the socio-economic impact of fisheries activities on the fishing communities, consumers, and changes in the marketing and handling patterns due to changing stocks in the Lake.

Financing

The regional project is to be financed by the World Bank to the tune of US\$ 20m over 5 years, with 80% financed by donors (part GEF grant) and 20% (US\$ 4m) financed by the three Governments. GoU contribution will be in the form of staff salaries and wages, allowances and housing.

Feasibility Studies

Between 1969 and 1971 comprehensive fish stock assessment data on Lake Victoria was obtained, though it is now outdated. EEC hired a consultant to visit the riparian states during 1983/84, to evaluate the gaps in the research information and the bottlenecks within the research establishments and to establish their capacities.

Plan of Operation

Detailed programme preparation is yet to be done. However a symposium is planned at the start of the five year programme to review past work on Lake Victoria.

Monitoring Report

The project has not yet started.

PROJECT PROFILE

<u>Sector</u>	Agriculture
<u>Subsector</u>	Studies
<u>Code</u>	AG 18(A) [formerly AG 48]
<u>Title</u>	Fish Marketing Infrastructure Development Study.
<u>Implementing Agency</u>	Ministry of Agriculture, Animal Industry & Fisheries
<u>Location</u>	Countrywide
<u>Total Future Cost</u>	US \$ 0.38m
<u>Total Planned Exp.</u>	US \$ 0.38m
<u>Funds Secured</u>	Nil
<u>Funding Gap</u>	US \$ 0.38m
<u>Completion date</u>	Not yet started

Objectives

- i) To facilitate better and more hygienic methods of fish handling, processing and marketing at fish landing sites.
- ii) To reduce the present high post harvest losses.
- iii) To improve the fish distribution system from centres of production to those centers of consumption.
- iv) To develop an action plan for the orderly export of fish.

Background

The fishing industry is based on the exploitation of inland waters which total some 35,400 sq. km. or 15% of Uganda's total surface area. This activity is almost exclusively carried out by artisanal fishermen using unimproved technologies. There are about 200,000 people deriving their livelihood from the fishing industry either through catching, processing, distribution, boat building or manufacture of other fishing implements. The major part of the fish produced is consumed locally but there is growing potential for exports. This potential is presently constrained by the underdeveloped marketing system which results in high post harvest fish losses.

The study will define areas for government intervention and those suitable for private sector participation, draw up an action plan to achieve these and quantify the magnitude of resources necessary for implementing the plan.

Technical Description

The traditional fish processing methods include hot smoking, salting, grilling or frying using cooking fats and sun drying. Recently freezing or icing has been introduced in the major urban centres where cooling facilities exist but these are still limited. The study will cover development of these facilities to the main producing/consuming areas. It will include the following elements:

- i) provision of ice making machines
- ii) provision of treated water supply
- iii) provision of improved fish smoking kilns
- iv) provision of weighing sheds and scales
- v) provision of fish salting vats
- vi) appropriate fish stores for the processed fish.

The beneficiaries of these activities will be the artisan fishermen and the consuming public.

Financing

The study has not yet attracted any financiers.

Feasibility Studies

A UNDP Mission in 1982 recommended a comprehensive study of fish marketing in Uganda. Subsequently a Chinese team carried out a fish marketing study. They visited virtually all the major fish landings in the country. Their report however was not conclusive. There is therefore a need to carry out further study.

Plan of Operation

Terms of reference for the study will be drafted, discussed and agreed. As soon as funds are secured a team will be assembled to undertake the study. The report will be used to seek external finance for suitable projects.

Monitoring Report

The study has not yet started.

PROJECT PROFILE

<u>Sector</u>	Agriculture
<u>Sub-Sector</u>	Studies
<u>Code</u>	AG 40(A)
<u>Title</u>	Meat Production Masterplan Study
<u>Implementing Agency</u>	Ministry of Agriculture, Animal Industry & Fisheries
<u>Location</u>	Countrywide
<u>Total future Cost</u>	US\$0.62m
<u>Total Planned Exp.</u>	US\$0.62m
<u>Funds Secured</u>	Nil
<u>Funding Gap</u>	US\$0.62m
<u>Completion date</u>	Unknown

Objectives

- i) To produce a comprehensive plan which will provide a perspective for the sustainable development of the meat industry to ensure adequate supplies for both the local and export markets.
- ii) To address the needs and priorities identified in the meat production subsector and prepare investment projects with cost estimates for possible implementation.

Background

Uganda has about 4.2 million head of cattle of which 95% are owned by small holders practicing traditional grazing methods. Apart from the drier regions of the N&NE where pastures are seasonal, Uganda has rich forage resources and an ideal climate for both milk and beef production. Commercial beef ranching schemes commenced in the early 1960s mainly as a land use form in the areas that had been reclaimed from tsetse in the central region and to promote development of the meat industry. By 1977 the schemes had spread to other parts of the country reaching a total of 432 ranches in number and by 1984 the ranches were producing over 20% of Uganda's beef. Under periods of civic unrest, the ranches suffered gravely from banditry. Many animals were either looted or slaughtered or perished from diseases. Most of the machinery and equipment were stolen.

The prospects for growth in demand for Ugandan livestock and livestock products both at home and abroad are favorable. Uganda itself is no longer self-sufficient in meat and meat products and current national per capita consumption estimates for beef is 3kg p a which compares very poorly with 50kg per capita for more developed parts of the world and is well below the national target of 10kg per capita by the year 2000.

A Meat Production Masterplan is expected to identify projects which will address key constraints in the meat industry. Factors which limit the development of the industry can be grouped into technical constraints, including human resource aspects; enabling measures, like land tenure issues and uncontrolled movement of stock between districts, water shortage, unavailability of credit; environmental limitations and political factors.

The Meat Production Masterplan will complement the Dairy Sector Masterplan.

Technical Description

The study will examine national economic aspects and perspectives of the meat industry and examine the comparative advantage which the industry may have in relation to neighboring countries. It will also examine production aspects, detailing both technical and non-technical constraints, paying particular attention to the constraints of the traditional sector. To understand gender and social aspects, the study will carry out a survey amongst a broad sample of farmers (gender-desegregated) in order to understand their perception and acceptability of their different roles in livestock production. The study will further look into aspects of land tenure; marketing; processing and diversification; institutional framework, especially with regard to discussing areas for withdrawal of Government intervention from production aspects and input supply; examine current laws and related legal aspects of beef production and processing; propose a national breeding policy and examine the need for a Meat Commission.

Financing

ADB is providing an ADF/TAF grant of US\$0.55m (FUA 0.78m equivalent) for the Meat Production Masterplan, which will include a study of water for livestock as well.

Feasibility Study

None.

Plan of Operation

The study will be carried out in 3 phases: an inception phase to review past studies, on-going projects and the draft meat policy under preparation. Phase 2 will examine in depth and address the constraints and potential within the subsector, and identify possible options for further development. Phase 3 will refine the proposals retained in phase 2, prepare detailed investment projects and the Meat Production Masterplan and make recommendations for finalizing the Meat Policy. Work is expected to start in March 1994 and to last for 14 months.

Monitoring report

The study has not yet started.

PROJECT PROFILE

<u>Sector</u>	Environment Protection
<u>Subsector</u>	Forestry
<u>Code</u>	EP 02(D)
<u>Title</u>	AFRENA Uganda Project
<u>Implementing Agency</u>	NARO
<u>Location</u>	Kabele District
<u>Total Future Cost</u>	US \$ 0.72m
<u>Total Plan Exp.</u>	US \$ 0.60m
<u>Funds Secured</u>	US \$ 0.72m
<u>Funding Gap</u>	Nil
<u>Completion Date</u>	June 1997

Objectives

The project aims to contribute to increases in sustainable agricultural production through adoption of agro-forestry technology practices compatible with land-use systems in the highlands of Eastern and Central Africa, thus increasing the supply of food, income, shelter and energy to farmers and society as a whole.

Background

AFRENA Uganda is part of the agro-forestry research network for East and Central Africa which is coordinated by the International Centre for Research in Agro-Forestry (ICRAF). The project includes Uganda, Kenya, Rwanda and Burundi.

The highlands of East and Central African countries comprise 207,000 km² and have a population of 26 million. Agro-forestry as a form of land use is well known by the farmers of this ecological zone. In a diagnosis of the various land-use systems in the highland areas, several agro-forestry technologies were identified as having a potential to alleviate diagnosed problems. AFRENA Uganda operates in Kabele and Kisoro Districts which are typical mountainous areas.

Technical Description

AFRENA Uganda will emphasize the development of promising and easy to adopt fodder technologies which also promote soil conservation and wood and fruit based technologies. In the steep lands of South Western Uganda, emphasis will be placed on soil and water conservation through the use of contour hedgers placed in the middle of the steep cultivated plots.

Financing

The project is funded by USAID.

Feasibility Study

N/A

Plan of Operation

AFRENA Uganda is coordinated by ICRAF and the National Agricultural Research Organization (NARO). The project will end in 1997.

Monitoring Report

A technical regional Steering Committee was formed to improve planning and prioritization of research.

PROJECT PROFILE

<u>Sector</u>	Environment Protection
<u>SubSector</u>	Forestry
<u>Code</u>	EP 06(C)
<u>Title</u>	National Tropical Forests Action Programme (NTFAP)
<u>Implementing Agency</u>	Ministry of Natural Resources
<u>Location</u>	Countrywide
<u>Total Future Cost</u>	US \$ 0.092m
<u>Total Plan Exp</u>	US \$ 0.092m
<u>Funds Secured</u>	US \$ 0.038m
<u>Funding Gap</u>	US \$ 0.054m
<u>Completion Date</u>	1995

Objectives

To enhance the role of forestry in national and local development plans, and to realize their full potential through policies and actions which promote sustainable forestry.

Background

Following the ratification of the Convention on Biological Diversity and Climatic Change, both of which were a result of the UNCED, the Forest Department, through NTFAP, hopes to join other agencies in the fight to combat deforestation, soil and environmental degradation which are evident in many parts of Uganda.

Technical Description

The programme will foster a national debate as a medium for the preparation of the National Tropical Forests Action Plan will start at the village level, and will be incorporated into Parish, Sub-Parish, County and District Forest Action Plans solving conflicting interests between different stake holders.

Financing

The United Nations Environment Programme has expressed interest in funding some NTFAP activities, FAO, is funding some workshops. In the meantime it is only financed by GOU while donor financing is being mobilized.

Feasibility Study

N/A

Plan of Operation

The NTFAP will be led by a Steering Committee composed of Government, NGOs and the private sector. The Committee will be assisted by a National Coordinating Unit (NCU), composed of national/international consultants and a small secretariat. The NCU will ensure quality control of technical contributions, coordinate inputs from national sources, provide a focal point within the country and liaise with different partners, including donors.

Monitoring Report

N/A

PROJECT PROFILE

<u>Sector</u>	Environment Protection
<u>Subsector</u>	Forestry
<u>Code</u>	EP 08(A) [formerly EP 60]
<u>Title</u>	Forestry Rehabilitation
<u>Implementing Agency</u>	Ministry of Natural Resources
<u>Location</u>	Countrywide
<u>Total Future Cost</u>	US\$ 10.01m
<u>Total Plan Exp.</u>	US\$ 9.01m
<u>Funds Secured</u>	US\$ 10.01m
<u>Funding Gap</u>	Nil
<u>Completion Date</u>	June 1997

Objectives

- i) To improve management of Uganda's forest resources to meet domestic needs for timber, fuel wood and other wood products on a sustainable basis.
- ii) To increase the area for and improve the management of conservation of forests in order to protect unique ecological systems.

Background

Like all other sectors of the economy the forest subsector suffered severely during the 1970s. Lack of resources prevented the Forestry Department from implementing programmes. The saw-milling industry, once the basis of a flourishing domestic and export oriented wood products sector, is currently operating at 15% of its 1969 capacity. Thus in 1985 a team of consultants was fielded with financial assistance from Canadian International Development Agency to prepare a forest rehabilitation project. In 1987 a credit agreement was signed between the World Bank and GoU.

Technical Description

Four of the initial six components are still operational:

- i) Peri-urban plantation development. This involves the establishment of peri-urban fuel wood plantations. The Department will undertake the supply of seedlings, supervision and maintenance of the plantations.
- ii) Natural High Forest Management and Conservation. This involves improvement of management through the rehabilitation of forest areas by a refinement or enrichment programme, where encroachment and intensive logging operations have been taking place; boundary marking using trees; an inventory; natural conservation; and charcoal extinction. Afforestation of bare hills will also take place.
- iii) Soft wood Plantation Rehabilitation. The project will finance the rehabilitation of approximately 13,400 hectares of soft wood plantations through pruning, thinning, fire protection and establishment of new plantations. This involves the financing of labour, equipment, vehicles, road construction and rehabilitation, limited housing and the establishment of nurseries.
- iv) Forest Department Rehabilitation. This involves rehabilitation of offices, provision of vehicles and technical assistance to the Department, training of personnel, strengthening of research and undertaking studies.
- v) The Farm Forestry Component. This aimed at promoting multipurpose tree planting by the local population. Forest Department established nurseries for provision of seedlings for distribution to farmers and extension services. This component stopped in October 1991.
- vi) Training. Phase I of this component ended in 1989. Phase II will be considered by the donors after completion of civil works at Nyabyeya Forestry College.

Financing

The project is jointly financed by IDA, Norway, EEC, and GoU.

Feasibility Study/Report

The World Bank Staff Appraisal Report of May 1987 is being used to guide the project implementation.

Plan of Operation

The project is implemented by the Forestry Department with assistance from various consultants. It is a six year project which became operational in July 1988. The IDA funded components of softwood plantation and Forest department rehabilitation will end in June 1994. The Peri-Urban component funded by NORAD ends in October 1994 while the EEC funded component ends in June 1995.

Monitoring Report

Work is progressing well and the project will end as scheduled.

PROJECT PROFILE

<u>Sector</u>	Environment Protection
<u>Subsector</u>	Environment
<u>Code</u>	EP 01(A) [formerly EP 01]
<u>Title</u>	Environment Protection Pilot Villages
<u>Implementing Agency</u>	Ministry of Natural Resources
<u>Location</u>	Butaleja, Gombe, Ibuje, Olilim and Ruhaama
<u>Total Future Cost</u>	US\$ 0.13m
<u>Total Plan Exp</u>	US\$ 0.13m
<u>Funds Secured</u>	US\$ 0.13m
<u>Funding Gap</u>	Nil
<u>Completion date</u>	1994

Objectives

The project aims

- (i) to improve the living conditions of the rural people, whilst also considering environmental protection;
- (ii) to meet basic needs of the populace through the provision of appropriate technological skills, expansion of potable water-supply and development of an agro-forestry system based on local and traditional practices. This will result in increased employment opportunities and income generation for the target groups.

Background

Over the last twenty years, many villages have been badly affected by wars, others have suffered from famines and from overgrazing while many have had to support more people than can be adequately sustained by the available local resources. The resource base of many villages is in danger of rapid erosion and cannot support the ever increasing human population with the traditional technologies for growing food and procuring energy. These demonstration projects are therefore meant to develop villages selected from the most disadvantaged areas.

Technical Description

The project involves:

- (i) provision of potable water to target groups by drilling boreholes and rehabilitating (protected) springs and wells;
- (ii) provision and development of low cost building materials and skills for improvement of social and private buildings;
- (iii) introduction of simple agricultural technologies for sustainable food production;
- (iv) development of tree planting programmes for fuel wood, fruit and for soil erosion control;
- (v) rehabilitation and maintenance of communications, health and sanitation facilities and
- (vi) on the job training for project personnel will be given on simple technologies like production of bricks and tiles and construction of improved houses.

Financing

The project is jointly funded by UNEP and GoU.

Feasibility Studies

A feasibility study was initially carried out by Morconsult consulting engineers in Butaleja, Gombe and Ibuje.

Plan of Operation

The project is implemented by the Department of Environment Protection in the Ministry of Natural Resources.

Construction work on Butaleja, Gombe and Ruhaama will be completed this year and work on Ibuje will begin thereafter.

Monitoring Report

The project was supposed to end in 1992 but due to budgetary constraints, work is now expected to be completed in 1994.

PROJECT PROFILE

<u>Sector</u>	Environment Protection
<u>Subsector</u>	Forestry
<u>Code</u>	EP 03(B) [formerly EP 07]
<u>Title</u>	Mbarara Bare Hills
<u>Implementing Agency</u>	Ministry of Natural Resources
<u>Location</u>	Mbarara District
<u>Total Future Cost</u>	US\$ 4.23m
<u>Total Plan Exp</u>	US\$ 4.23m
<u>Funds Secured</u>	Nil
<u>Funding Gap</u>	US\$ 4.23m
<u>Completion Date</u>	1998

Objectives

To stop environmental degradation in the bare hills in Mbarara District so as to increase their productivity. This will be based on proper land use techniques to meet domestic needs for food, fuel wood, poles, fodder and other wood products. The immediate objective will be to develop an effective extension system by involving people.

Background

Mbarara District covers an area of 10,839 sq. km. giving a population density of 63 inhabitants per km. The region receives about 750 mm of rainfall annually. But bad land use practices has led to the present environmental degradation, especially in the counties of Bukanga, Isingiro, Ruhaama and Rwampara.

Technical Description

The project will involve the participation of the local people together with 22 full time multi-disciplinary technical staff. It will involve three main activities:

- i) base line data advice where community feelings are assessed about the project, its evaluation and its impact;
- ii) training, which will involve recruitment of trainees and deployment of trainers. The course will cover soil erosion and conservation practices, tree planting, agro forestry practices, etc; and
- iii) on-farm activities such as seed collection, tree planting, etc.

Financing

The total cost of the project is US\$ 4.23m. UNCDF, FAO and UNDP who had shown interest in financing this project have all now withdrawn their offers. ADB/ADF has indicated interest in co-financing this project provided another donor is identified.

Feasibility Studies

A comprehensive study was carried out by the Forest Department in 1989 producing a project document entitled 'Mbarara Bare Hills Integrated Land-use project'. It was found that immediate action should be taken because the hills have been completely denuded and soil erosion is very serious.

Plan of Operation

This is a four-year project which will be implemented by the Forestry Department in the Ministry of Natural Resources. It will also involve the participation of the local people, schools and other institutions as well as non-government organizations.

Monitoring Report

N/A

PROJECT PROFILE

<u>Sector</u>	Environment Protection
<u>Subsector</u>	Environment
<u>Code</u>	EP 06(A) [formerly PA 30]
<u>Title</u>	National Environment Information Centre
<u>Implementing Agency</u>	Ministry of Natural Resources
<u>Location</u>	Kampala
<u>Total Future Cost</u>	US\$ 2.82m
<u>Total Planned Exp</u>	US\$ 2.82m
<u>Funds Secured</u>	US\$ 0.16m
<u>Funding Gap</u>	US\$ 2.65m
<u>Completion Date</u>	1997

Objectives

To provide accurate, reliable and timely information on the environment in order to aid decision making and public awareness.

Background

Wise planning and productive management of the national natural resource base will require up-to-date information on the state and trends of key environmental variables. This project seeks to fill this gap.

Technical Description

The project will cover the following aspects:

- (i) support to the NEAP planning and implementation process in defining and addressing major issues pertaining to the environment;
- (ii) preparation of the National State of the Environment report for Uganda (bi-annual);
- (iii) development of district environment profiles
- (iv) assistance to protected areas and natural resource projects;
- (v) decentralization of environmental information systems sub-national level;
- (vi) continuous update of the Uganda database;
- (vii) dissemination of Environmental Information through workshops, seminars, publications, etc;
- (viii) provision of environmental information through the development of a user query service, audio visuals, other multi-media products, etc;
- (ix) development of indicators for monitoring and evaluation of the environment.

Financing

DANIDA which funded Phase I of the project, has pulled out. Other donors are being mobilised.

Plan of Operation

The project is implemented by the Environment Protection Department in the Ministry of Natural Resources. The first phase was completed in 1991 and was followed by a more comprehensive developmental phase which will end in 1997.

Monitoring Report

District profiles for Iganga and Jinja have been completed. Work on Kampala District profile is in its advanced stages and programmes, e.g support to NEAP, wetlands database, etc are still going on.

PROJECT PROFILE

<u>Sector</u>	Environment Protection
<u>Sub-sector</u>	Environment
<u>Code</u>	EP 06(B) [formerly EP 12(N)]
<u>Title</u>	National Environment Action Plan
<u>Implementing Agency</u>	Ministry of Natural Resources
<u>Location</u>	Kampala
<u>Total Future Cost</u>	US\$ 1.25m
<u>Total Plan Exp.</u>	US\$ 1.25m
<u>Funds Secured</u>	US\$ 1.25m
<u>Funding Gap</u>	Nil
<u>Completion Date</u>	1994

Objectives

To assist the country's public and private sectors to more effectively and sustainably manage the natural resource base in selected areas.

Background

In Uganda environmental protection is of vital concern. Causes of environmental degradation are those common in similar countries, for example, deforestation, increasing population pressure, lack of conservation farming practices and improper land use. This programme will formulate a National Environment Action Plan (NEAP).

Technical Description

Eight task forces have been deployed. Each is focusing on a particular environmental issue or group of issues which were identified after extensive consultations with sectoral ministries/departments, the private sector, donor agencies and non-governmental organizations.

Financing

The project is largely financed by USAID. Sweden, UNSO and IDA also contribute to the project.

Feasibility Study

N/A

Plan of Operation

The Environmental Action Planning process is intended to provide a framework for integrating economic and social development. The NEAP will identify and analyze major environmental problems and develop a comprehensive national strategy.

The NEAP is led by a steering committee formed from the highest levels of decision making in the Government. The steering committee is assisted by the NEAP Secretariat, which is a small team of full time national and international experts from both the public and private sectors. The secretariat is supported by professional staff including a cross-section of specialists in fields related to the environment.

The project started in September 1991 and ends in June 1994.

Monitoring Report

NEAP has so far completed work on the different reports it was charged with. They are awaiting approval by the Cabinet sub-committee.

PROJECT PROFILE

<u>Sector</u>	Industry
<u>Sub-sector</u>	Manufacturing
<u>Code</u>	IT 03(A) [formerly IT 05(A)]
<u>Title</u>	The Sugar Industry (Kinyara)
<u>Implementing Agency</u>	National Sugar Works (Kinyara) Ltd
<u>Location</u>	Kinyara, Masindi District
<u>Total Future Cost</u>	US\$ 56.66m
<u>Total Plan Exp.</u>	US\$ 56.66m
<u>Funds Secured</u>	US\$ 56.66m
<u>Funding Gap</u>	Nil
<u>Completion Date</u>	1996

Objectives

To develop Kinyara Sugar Complex into a 1500 tonnes of cane per day estate and (tcd) factory.

Background

The development of Kinyara as a sugar estate started in 1969. Production of sugar started in 1976, but did not achieve full factory capacity due to a number of factors such as lack of foreign exchange to buy equipment and spares, poor management, etc. The factory was forced to close down in 1984.

Technical Description

The programme will involve the rehabilitation of some agricultural equipment, the factory and some buildings. The estate will be cleared and prepared for planting. Simultaneously, the factory will be re-equipped with new machinery to enable it to restart crushing of sugar cane. Housing will be rehabilitated to accommodate the management and the work-force. A total of 1244 new houses will be built.

Financing

Project finance will be provided partly by local equity and partly by foreign loans. The local equity will be provided by GoU and will cover the project's local costs. Foreign loans are required for the capital costs.

Feasibility Studies

Booker Tate of the UK were invited in 1988 to take control of Kinyara Sugar Works in order to halt further deterioration of the estate. During their stay they prepared a report indicating the broad areas of rehabilitation and also started preparation of nursery beds for seedlings.

The United States Government allocated funds for FC Schaffer and Associates Inc (FCSA) to carry out a detailed survey of the rehabilitation requirements. FCSA prepared cost estimates on work required for factory rehabilitation.

Plan of Operations

Booker Tate have been contracted to manage Kinyara Sugar Estate until 1996.

Monitoring Report

The main rehabilitation phase commenced in early 1993. The cane inventory has increased steadily and it stood at almost 500 ha at the end of March 1993. Two previously-abandoned fields have been rehabilitated and contracts were offered for ploughing work. Climatic conditions were good for germination and growth of young cane. Construction work on a new fuel station was undertaken and the housing stock has been expanded for local and international staff. Routine care and maintenance schedules have been adhered to in order to maintain the plant at the level achieved after the preservation work undertaken by the ODA in 1991.

PROJECT PROFILE

<u>Sector</u>	Industry
<u>Sub-Sector</u>	Manufacturing
<u>Code</u>	IT 03(B) [formerly IT 05(B)]
<u>Title</u>	The Sugar Industry (Kakira)
<u>Implementing Agency</u>	Kakira Sugar Works (1985) Ltd
<u>Location</u>	Jinja
<u>Total Future Cost</u>	US\$ 19.0m
<u>Total Plan Exp.</u>	US\$ 19.0m
<u>Funds Secured</u>	US\$ 19.0m
<u>Funding Gap</u>	Nil
<u>Completion Date</u>	1996

Objectives

The project aims to restore Kakira Sugar Works to its original capacity of crushing 3,000 tonnes of cane per day. The scope of the project was reduced from 3000 tones of cane per day to 2500 due to unexpected cost increases in the factory rehabilitation programme.

Background

The Kakira sugar complex was conceived, developed, owned and operated by the Madhvani Group from 1924 until they left the country in the 1970s. Since then most assets have been mishandled and production has declined. In 1985 an agreement was signed between the Uganda Government and East African Holdings Ltd and a joint venture company, Kakira Sugar Works (1985) Ltd, was formed to rehabilitate and operate the Kakira complex.

Technical Description

The sugar estate will be revamped and the irrigation system restored. The factory will be rehabilitated. An outgrower farming scheme will be developed.

The major elements of the project can be summarized as follows:

- i) Development of plantation (about 5000 hectares)
- ii) Rehabilitation of irrigation system
- iii) Purchase of harvesters
- iv) Building up of new boiler
- vi) Building a sugar technology centre
- vii) Development of out grower scheme to produce 33% of the required sugar cane.

Financing

Finances for the rehabilitation of the Kakira Sugar Works have been arranged from World Bank/IDA and ADB .

Feasibility Studies

In 1987 the World Bank financed a comprehensive study of the rehabilitation needs of the entire complex. The study established that the project is technically feasible and economically viable.

Plan of Operation

The area under sugar cane is 12130 acres. The first phase of rehabilitation was completed in 1991 allowing the factory to crush 1000 tonnes of cane per day (tcd). Phase two of the rehabilitation commenced in August 1992 and aims to increase the crushing capacity to 2500 tcd. An outgrowers scheme will commence in 1993/94, financed by an ADB grant of US\$ 0.54m. The scheme will encourage local farmers to produce sugar cane and sell it to Kakira Sugar Works for processing.

Monitoring Report

The factory in Jinja closed in April 1993 for rehabilitation work and is expected to re-open soon. Before closure, the civil works for the second phase of rehabilitation were in progress. During the closure, contractors are dismantling and rehabilitating some of the old machinery and installing new ones. When the factory opens it will be capable of crushing 2000 tonnes of cane per day (representing an output of almost 200 tonnes of sugar) against the present 1000 tonnes of cane per day. The Government has reduced its equity holding in Kakira Sugar Works to 30%.

PROJECT PROFILE

<u>Sector</u>	Industry
<u>Sub-sector</u>	Manufacturing
<u>Code</u>	IT 26(A)
<u>Title</u>	National Leather & Footwear Industry Scheme
<u>Implementing Agency</u>	Ministry of Trade & Industry
<u>Location</u>	Nationwide
<u>Total Future Cost</u>	US\$ 0.84m
<u>Total Plan Exp.</u>	US\$ 0.84m
<u>Funds Secured</u>	US\$ 0.84m
<u>Funding Gap</u>	Nil
<u>Completion Date</u>	1996

Objectives

The project is part of the Regional Africa Leather and Footwear Industry Scheme and is designed to reinforce the capabilities of the Ugandan hides, skins and leather products sub-sector.

Background

Uganda has immense potential for growth of its leather industry and development of this sector is fairly recent. The country is well endowed with livestock and production of hides and skins exceeds the requirements of local tanneries. Most raw stock is exported either for contract tanning in Kenya or directly to overseas markets. The project will assist in developing an integrated leather industry in Uganda and UNIDO has experience of similar schemes in East Africa through the activities of its Regional Africa Leather and Footwear Industry Scheme.

Technical Description

The project will improve the quality and grading of raw hides and skins and increase the quantities in Jinja and Masaka districts. The project will make arrangements for the hides and skins improvement schemes to be self-sustaining through the operation of a revolving fund. This fund will be financed by the end-user industry with the repayments for the equipment received through international assistance and from the price incentives obtained.

Financing

The project is fully financed by UNIDO with Government inputs in kind.

Feasibility Study

UNIDO carried out an assessment of the Ugandan leather industry in 1987.

Plan of Operation

The project began in 1993 and will last 3 years. It is executed jointly by UNIDO and GoU in conjunction with the private sector and parastatal operators such as ULATI.

PROJECT PROFILE

<u>Sector</u>	Mining and Energy
<u>Sub-sector</u>	Mining
<u>Code</u>	ME 05(A) (formerly ME 07)
<u>Title</u>	Investment in Kilembe Complex
<u>Implementing Agency</u>	Ministry of Natural Resources
<u>Location</u>	Kilembe, Kasese
<u>Total Future Cost</u>	US\$ 0.73m
<u>Total Plan Exp</u>	US\$ 0.73m
<u>Funds Secured</u>	US\$ 0.68m
<u>Funding Gap</u>	US\$ 0.05m
<u>Completion Date</u>	1995

Objectives

- (i) To carry out preliminary activities (such as rehabilitation of the Mechanical Workshops, Mkombe Saw Mills and Mubuku Hydropower Station; establishment of the Foundry; rehabilitation and re-equipping of the Carpentry Workshop) which are necessary for the eventual rehabilitation of the mine.
- (ii) To carry out detailed laboratory studies to establish the possibility of separating the cobalt from the cobalt pyrites by bioleaching followed by the solvent extraction method to recover the cobalt and nickel.

Background

Kilembe Mines Ltd was owned and operated by M/s Falconbridge Nickel Mines of Canada until 1975, when GoU purchased the complex. However, since 1979 mining has been halted. Government has been seeking foreign financing to reactivate mining activity, while maintaining a skeleton staff at the site for purposes of care and maintenance. A study carried out by Seltrust Engineering Ltd. in 1983 recommended the revival of all operations in addition to erection of a Cobalt & Sulphuric Acid Plant at Kasese. EEC rehabilitated the hydropower station and Mkombe Saw Mills as well as the rehabilitating and re-equipping the Carpentry Workshop. Although many studies have indicated that the mining component is viable, these studies need to be updated.

Technical Description

The Democratic Peoples Republic of Korea and the GoU are rehabilitating the mechanical workshop and establishing a foundry.

Financing

The DPRK provided a loan of \$1.38m for the purchase of a concentrator, filter plant and the mechanical workshop. It also provided \$1.25m for the foundry.

Feasibility Studies

The Seltrust Engineering Ltd study of 1983 is being updated to establish the viability of the mining complex. Technical studies are being carried out by the DPRK team.

Plan of Operation

The funds from North Korea are being utilised in the rehabilitation of the workshops and other facilities. The company is initiating several income generating projects to ensure it becomes financially self sufficient in the near future. These include work on a mechanical workshop and foundry to produce spare parts for local industry plus for export.

Monitoring Report

Work on the foundry has been slow. Work on the prefabricated steel structure has been hampered by delayed supply of materials from DPRK. The Government decided to halt work on the smelter and concentrate on the foundry and workshop. The Koreans have been keen to rehabilitate the smelter and negotiation is required to divert their assistance instead towards rehabilitating the foundry and workshop. The Government's work on the foundations of the foundry should have been completed by June 1993.

PROJECT PROFILE

<u>Sector</u>	Mining & Energy
<u>Subsector</u>	Energy
<u>Code</u>	ME 04(A) [formerly ME 19(N)]
<u>Title</u>	Power III
<u>Implementing Agency</u>	Uganda Electricity Board
<u>Location</u>	Countrywide
<u>Total Future Cost</u>	US\$ 265.0m
<u>Total Plan Exp.</u>	US\$ 147.0m
<u>Funds Secured</u>	US\$ 246.2m
<u>Total Funding Gap</u>	US\$ 18.8m
<u>Completion Date</u>	1998

Objective

To enable UEB to meet the growing demand for electricity and to provide reliable power to its consumers at least cost.

Background

As with other areas of economic infrastructure, the UEB generation, transmission and distribution system suffered from severe lack of maintenance between 1971 - 86 and fell into a state of acute disrepair. As a result UEB has been unable to satisfy the country's needs for reliable power: generation in 1988 was below the level of 1970. The Power III project is intended to fund the construction of the Owen Falls Extension along with other essential investments in transmission, distribution, institutional support to UEB and various studies.

Technical Description

The project, comprises the following distinct components:

- (i) construction of a 200 MW extension to the Owen Falls Station (with an initial installed capacity of 80 MW);
- (ii) institutional strengthening of UEB, including training, technical assistance and a twinning arrangement with an overseas utility;
- (iii) strengthening the dam at Owen Falls; and
- (iv) rehabilitation of 33 kv and 11 kv lines.

Financing

Co-financing of the project is being handled by the World Bank. The following contributions have been pledged as of July 1993; IDA \$ 125.00m; ADF \$ 45.00m; Norway \$ 22.80m; Sweden (BITS) \$ 15.00m; ODA \$ 8.10m and CIDA \$ 0.28m. UEB will provide local currency equivalent to \$ 30.0m. Negotiations are going on with Islamic Development Bank to cover the funding gap of US\$ 18.8m. The World Bank is also continuing to solicit funds from other donors to close the gap.

Feasibility Study

Acres International carried out a Feasibility Study of Owen Falls Extension in May 1990. It demonstrates that :

- (i) there is an urgent need for additional generating capacity by the mid 1990s;
- (ii) Owen Falls Extension is both the most economic scheme and the only one that can be constructed in time;
- (iii) 200 MW (5 x 40 MW) is the optimal capacity; and that
- (iv) the project has an estimated economic rate of return of 17.2%.

Plan of Operation

Following confirmation of funding, the tender documents for civil works were issued and bids were opened in December 1992.

The lowest complying bid was from SIETCO with whom UEB signed a contract on November 5, 1993. After mobilisation, work is expected to commence on site before the end of the year.

Monitoring Report

N/A

PROJECT PROFILE

<u>Sector</u>	Health
<u>Sub-sector</u>	Primary Care
<u>Code</u>	HI 10(A) [formerly SI 74]
<u>Title</u>	South West Integrated Health & Water Project
<u>Implementing Agency</u>	Ministries of Health, Local Government Natural Resources and Finance and Economic Planning.
<u>Location</u>	Bushenyi, Kabale, Kasese, Masaka, Mbarara, Rakai and Rukungiri Districts
<u>Total Future Cost</u>	US\$ 18.15m
<u>Total Plan Exp</u>	US\$ 18.15m
<u>Funds Secured</u>	US\$ 14.20m
<u>Funding Gap</u>	US\$ 3.95m
<u>Completion Date</u>	1995

Objectives

To reduce morbidity and mortality among children and mothers.

Background

Uganda has lagged behind other countries in implementation of Primary Health Care owing to the lack of a comprehensive policy. This project serves as a testing ground for Government policy development in community participation and community financing for water, sanitation and for initiatives which can increase women's access to employment.

Technical Description

The project undertakes the following:

- i) Provision of safe water supply (spring protection, handpump rehabilitation, borehole drilling and gravity flow schemes);
- ii) Advocacy of safe sanitation, including the construction and use of ventilated and improved pit latrines;
- iii) Establishment of a community based health care system through training of village health workers (volunteers) and traditional birth attendants.

Financing

The project is jointly funded by GoU, UNICEF, CIDA (Canada) and SIDA (Sweden).

Plan of Operation

The project is part of the UNICEF Uganda Country Programme 1990-95 and is being implemented by the Ministries of Health and Local Government under the coordination of the Ministry of Finance and Economic Planning. UNICEF executes on behalf of CIDA and SIDA.

Monitoring Report

A review of SWIP was undertaken by independent consultants. SWIP personnel participated in seven inter-ministerial steering committee meetings as well as in four GoU/UNICEF Country Programme Annual Reviews, and late in 1992/93 the GoU/UNICEF Programme Mid-Term Review.

PROJECT PROFILE

<u>Sector</u>	Water Infrastructure
<u>Sub-Sector</u>	Rural
<u>Code</u>	WI 05 [formerly SI 14 A,B,C,D]
<u>Title</u>	Rural Water Supply & Sanitation Programme
<u>Implementing Agency</u>	Ministries of Natural Resources, Local Government and Health and WDD
<u>Location</u>	Countrywide
<u>Total Future Cost</u>	US\$ 10.78m
<u>Total Plan Exp</u>	US\$ 10.78m
<u>Funds Secured</u>	US\$ 5.79m
<u>Funding Gap</u>	US\$ 4.99m
<u>Completion Date</u>	1996

Objectives

To increase access to potable water and to promote better sanitation through:

- i) the rehabilitation and construction of bore holes, dams, valley tanks and gravity flow schemes, protection of springs and shallow wells; facilitation and construction of demonstration pit latrines.
- ii) the investigation and assessment of ground water potential in weathered zones (regolith) in some catchment areas.

Background

Much of the rural water supply infrastructure has deteriorated and collapsed as a result of the war and negligence. 950 dams and valley tanks which were constructed between the mid 1950s and late 1960s in different parts of the country have silted up.

There is also increasing requirement for water and sanitation facilities arising from the influx of Refugees, especially from Sudan, who have settled in camps in Moyo and Masindi districts. Hydrogeology Phase II is expected to be undertaken with assistance of the University of Toronto funded by International Development Research Centre (IDRC).

Technical Description

The programme involves borehole drilling and provision of support equipment, with a drilling crew provided by GoJ, protection and maintenance of springs and shallow wells, and the construction of earth reservoirs and gravity schemes. The programme is also expected to involve pump testing, packer testing, ground water survey and well design.

Financing

The project has four financial schedules: pump replacement component (WI-05A); Spring protection/well/gravity component (WI-05B & WI-05C) and rural water borehole drilling (WI-05D). UNICEF will finance borehole pump replacements and spring protection. LWF (US\$ 0.05m) will operate in Moyo district and Aringa county. UNHCR has committed US\$ 0.08m for borehole drilling in Refugee Settlements. Italian Cooperation for Development is providing US\$ 4.7m for borehole drilling and rehabilitation in Kotido district, Luwero, Mubende and Mpigi. The Belgian Survival Fund and IFAD are to provide US\$ 1.40m for Hoima district under project SI-24(N). IDRC, Islamic Development Bank and the Government of Morocco have shown interest in some components of the programme. USAID, CARE and WDD are completing construction and rehabilitation of boreholes and protection of springs and wells in Arua district. They will be requested to support a similar programme in Nebbi district. ODA has indicated interest to finance ten year implementation proposal in Luwero and estimated to cost US\$ 2.40.

Feasibility Studies

The BSF/IFAD identification mission issued reports in June 1988 and July 1989. The National Water and Sanitation Strategy and Action Plan of March 1989 appreciated the need and viability of this programme. A report of the National Rural Water and Sanitation Programme has been finalized with assistance from DANIDA. The report is being reviewed and extension of the scope of this project will be determined by the findings of the report. A feasibility study has also been carried out for ODA to finance a project in Luwero and Masindi. This may lead to an extension of the completion date beyond 1966.

Plan of Operation

Work is on-going in various parts of the country involving construction and maintenance of water points. Studies on water catchment areas of River Nyabisheki in Mbarara and River Arocha in Apach will be carried out soon. Design and construction work for dams and valley tanks will initially commence in some districts. The planning, implementation and maintenance of the Rural Water Supply and Sanitation services is to be undertaken with the involvement and participation of local communities.

Monitoring Report

Work has continued to progress well in all the project areas. 600 BHs have been drilled, 2000 springs protected, 500 BHs rehabilitated and 50 wells constructed in 1992/93. Strong Community Based Maintenance Systems in each of the districts covered by the project have been established and these have maintained the high rate of source availability together with the desired effective utilisation ratio.

PROJECT PROFILE

<u>Sector</u>	Water Infrastructure
<u>Sub-Sector</u>	Rural
<u>Code</u>	WI 06(A) [formerly SI 83(N)]
<u>Title</u>	Rural Water & Sanitation, East Uganda
<u>Implementing Agency</u>	Ministries of Natural Resources, Local Government and Health
<u>Location</u>	Mukono, Jinja, Kamuli, Iganga, Tororo, Pallisa, Mbale and Kapchorwa districts
<u>Total Future Cost</u>	US\$ 24.95m
<u>Total Plan Exp.</u>	US\$ 24.95m
<u>Funds Secured</u>	US\$ 24.95m
<u>Funding Gap</u>	Nil
<u>Completion Date</u>	2001

Objectives

To improve rural water supply and sanitation systems in Eastern Uganda so as to bring about a sustainable reduction in water related diseases and in the burden of water collection for some three million people.

Background

With the assistance of DANIDA, GoU identified the need for institution building for the water and sanitation sub-sector in Eastern Uganda.

Technical Description

A total of 11,400 new/rehabilitated water points are to be developed (springs, dug shallow wells, hand dugured shallow wells, bore-holes, gravity schemes etc.) and 3000 institutional and 1500 household demonstration pit latrines constructed. The project will be geared to community participation in the maintenance and utilization of water sources. A strong component of the project is social mobilization, human resource development and project support communication.

Financing

Project cost for the 1st phase is DKK 209m funded by the Government of Denmark. The cost of the 2nd phase will be finalised after a project appraisal at the end of the 1st phase in December 1994.

Feasibility Studies

In December 1987 a DANIDA/Uganda appraisal mission issued a report on water supply and sanitation. The first report of the planning phase was issued in May 1989, the pilot project proposal report in July 1989 and the project proposal for the main phase in November 1989. The plan of operation was completed in March 1990 and up-dated in December 1990.

Plan of operation

The project is to last 10 years implemented in two five year phases and is expected to be spread over the target area in sub-phases. The first 5 year phase started in 1991. An appraisal of the second phase is planned for December 1994 to prepare for the implementation of the second phase expected to start in January 1996.

Monitoring Report

By the end of March 1993, about 1400 water sources had been improved which is expected to benefit 350,000 people in six of the eight project districts. In addition 564 successful boreholes had been drilled, 193 boreholes rehabilitated, 192 dug wells constructed. Sanitation average has tremendously improved in the project area through easy accessibility to sanplats and slabs, mobilisation, training and hygiene education.

PROJECT PROFILE

<u>Sector</u>	Water Infrastructure
<u>Sub-sector</u>	Urban
<u>Code</u>	WI 01(A) [formerly SI 11]
<u>Title</u>	Completion of Katwe/Kabatooro, Bushenyi, Ishaka and Rakai, Nebbi, Moyo, Arua, Pakwach and Koboko Water Supply Schemes
<u>Implementing Agency</u>	Ministry of Natural Resources/WDD
<u>Location</u>	Katwe/Kabatooro, Bushenyi, Ishaka, Nebbi, Moyo, Arua, Pakwach and Koboko
<u>Total Future Cost</u>	US\$ 10.00 m
<u>Total Plan Exp</u>	US\$ 5.00 m
<u>Funds Secured</u>	Nil
<u>Funding Gap</u>	US\$ 10.00 m
<u>Completion Date</u>	1998

Objectives

To produce 40 cubic metres of water per month for each of the towns of Katwe and Bushenyi, Ishaka, Pakwach, Koboko, Nebbi, Moyo, Arua and Nakapiripirit and 20 cubic metres of water per month for Rakai. This will benefit approximately 80,000 people in all the nine towns.

Background

In 1974 the Government received a loan of 20m FF from the French Government to purchase equipment for 8 town supplies. Another loan of 20m FF was received in 1991 to complete the water supplies of Katwe/Kabatooro, Bushenyi/Ishaka and Rakai. GoU contributed the local costs. The funds were only able to complete Katwe/Kabatooro and Bushenyi/Ishaka.

Technical Description

The project provides pumps, treatment plants, pipes, and constructs pump stations, transmission and distribution mains and reservoirs.

Financing

40m FF from a French financial protocol has already been utilised in phase I to cover Katwe/Kabatooro, and Bushenyi/Ishaka. Negotiation for a second protocol amounting to 30m FF, is underway to cover the remaining towns of Rakai, Pakwach, Nebbi, Arua, Moyo, and Koboko.

Feasibility Studies

The first feasibility study was carried out in 1969 financed by ADB. Norconsult, was chosen to study 74 centres all over the country. Of these, only 18 were recommended for implementation. A second study was again carried out by Norconsult in 1974 on 8 water supply schemes. Presently, two water supply schemes have been completed with funds from the French Government. The main contractor was Sogea, a French company.

Plan of Operation

A Design/Construct type of agreement was favoured for the implementation of three schemes, Katwe/Kabatooro, Bushenyi/Ishaka and Rakai. Sogea undertook to design and construct these water supplies, while Water Development Department supervised the projects. Construction for two towns has been completed in a period of 18 months.

Monitoring Report

Implementation in the towns of Katwe and Bushenyi is now complete and the extension to Ishaka is underway. The rest of the towns in this component have been studied under the countrywide rural towns programme although implementation of the next six awaits availability of funds for Phase II.

PROJECT PROFILE

<u>Sector</u>	Water Infrastructure
<u>Sub-sector</u>	Urban
<u>Code</u>	WI 02(A) [formerly SI 12]
<u>Title</u>	Second Water Supply Project
<u>Implementing Agency</u>	Ministry of Natural Resources (NWSC)
<u>Location</u>	Kampala, Jinja, Masaka, Mbarara and Tororo
<u>Total Future Cost</u>	US\$ 67.47m
<u>Total Plan Exp.</u>	US\$ 44.66m
<u>Funds Secured</u>	US\$ 66.10m
<u>Funding Gap</u>	US\$ 1.36m
<u>Completion Date</u>	1996

Objectives

To expand and improve water supply systems as well as waste water treatment facilities and service capacities. The expanded water supply system would meet demand in the five major towns up to about year 200, increasing domestic usage from the current 50% to 80%.

Background

The water and sewerage facilities in the seven major towns of Kampala, Entebbe, Jinja, Masaka, Mbarara, Tororo and Mbale were largely installed and expanded in the 1950s and 1960s but, due to internal political troubles, began to deteriorate during the 1970s and 1980s. The World Bank, EEC and IDB have recently revived and rehabilitated the dilapidated systems to their original design capacities in addition to making modest improvements.

However, the output from the rehabilitated/improved systems is insufficient to meet present and forecast requirements up to year 200, with the exception of Entebbe and Tororo.

Technical Description

The project consists of the following components:

- i) Water Supply/Sewerage expansion in five towns;
- ii) Technical assistance, training and other measures to improve NWSC's financial performance;
- iii) Construction Supervision and Project Coordination Unit.

The main physical works are concentrated in the five towns, however the institutions strengthening, minor works and supplies all the 9 towns under NWSC.

Financing

The total project cost is estimated at US\$ 126.8m (Local and foreign). The World Bank (IDA) funding covers approximately 50% of the overall project cost. The contribution and status of the donors are as follows: IDA US\$ 60.0m, EEC US\$ 23.8m, Austria US\$9.0m, GTZ US\$2.9m, NWSC US\$5.95m and GoU US\$5.95m. The funding gap is due to unavailability of funds that were expected from Italy for Jinja Water Supply and sewerage expansion, and due to additional scope of work in Kampala water distribution system revealed by the pilot project for leak detection. Efforts are underway to try and bridge this gap through Austrian and Japanese assistance, and a new credit from the World Bank.

Feasibility Studies

Detailed Engineering designs and economic appraisals have been undertaken. The Economic Rate of Return anticipated is 8.1 per cent on average for the 5 towns.

Plan of Operation

Since the project is multi-donor funded, each donor has its own financing, procurement and disbursement arrangements with GoU. All consultancy services are well advanced and estimated progress based on anticipated World Bank annual disbursement rates has been established.

Monitoring Report

New Water treatment works for Kampala (Gaba II) was completed and commissioned in December 1992, boosting water supply to Kampala by more than 100 per cent. The new water works is operated by about 70 operators trained through EEC assistance.

Detection and registration of consumers in 7 NWSC towns has been completed providing a comprehensive and reliable data base for billing operations. Computerisation of billing operations started in February 1993 in Kampala and is planned to cover all nine NWSC towns by December 1994.

The five-year IDA financed training programme started in February 1993. It covers management and supervisory skills at all levels in technical, financial and administrative functions of NWSC. Also long term fellowships (master's degree) have been awarded to NWSC staff.

Tenders for the construction of new water works in Mbarara and Masaka, new reservoirs and transmission lines in Kampala, and improvements to water intake structure in Mbale and Tororo were received in July 1993 and are currently being evaluated. Construction is slated to commence in the second half of 1994.

Procurement of transport, equipment, pipes and other materials is fairly advanced and will enable physical implementation of meter installation programme, water quality monitoring, and further sewer cleaning and repair in 1994.

Negotiations are underway with Austria and the World Bank for additional funds for implementation of a larger scope of water network rehabilitation in Kampala and for Jinja Water Supply and Sewerage rehabilitation and expansion.

PROJECT PROFILE

<u>Sector</u>	Water Infrastructure
<u>Sub-sector</u>	Urban
<u>Code</u>	WI 04 [formerly SI 84(K) and SI 32(A) & (B)]
<u>Title</u>	Small Towns Water & Sanitation Programme
<u>Implementing Agency</u>	Ministries of Natural Resources and Kampala City Council
<u>Location</u>	Countrywide
<u>Total Future Cost</u>	US\$ 51.87 m
<u>Total Plan Exp</u>	US\$ 35.94 m
<u>Funds Secured</u>	US\$ 29.63 m
<u>Funding Gap</u>	US\$ 22.24 m
<u>Completion Date</u>	1998

Objectives

To provide improved water supply and sanitation to 60 small towns and about 200 rural growth centres outside the 9 major towns under NWSC jurisdiction.

Background

In 1984 GoU received a grant of DM 12 million from Germany for construction of workshops for water supply systems. However, the project was interrupted by the civil war. With the return of peace, agreement was reached to utilise the grant for the rehabilitation of water systems in the towns of Kabarole, Kabale, Kasese, Hoima, Mubende and Masindi. During this period, a national programme aimed at improving the water and sanitation services in the rest of the small towns countrywide was conceived. The World Bank was requested to finance the preparation of the programme and this was done in 1992.

Technical Description

The project involves the rehabilitation, expansion and construction of water schemes. The project will also cover the human resource development at key management levels in order to ensure sustainability of the facilities to be provided.

The KFW funding covers the rehabilitation and consequent expansion of facilities in the 6 towns of Kabarole, Kabale, Kasese, Hoima, Mubende and Masindi (WI04 B). This is expected to be accomplished in 1997.

In preparation for the expansion of the project to other small towns, a number of studies will be carried out. Extension to other towns not hitherto benefiting from any funding is expected to commence during 1993/94 (WI04 C) with the IDA component covering 11 towns that have been appraised.

The Urban Low-cost Water and Sanitation component (WI04 A) is designed to help plan and develop appropriate and sustainable mechanisms for providing low-cost water, sanitation and waste disposal to informal settlers.

Financing

The project is financed by IDA, KFW, UNDP, GoU and Kampala City Council. The project has three financial schedules (i) for the KFW financed component (WI-04B); (ii) the IDA component (WI-04C) and (iii) UNDP Urban Low-cost component (WI-04A). Continued search for funds from donors is envisaged in order to implement the programme in as many towns as possible.

A UNDP-IBRD (RWSG-EA) identification mission was fielded in 1991 and a project document for a 2½ year urban low-cost water, sanitation and waste disposal pilot project for Katwe-Kampala was signed in September 1992.

Feasibility Studies

An appraisal and a number of mission reports have been prepared for the IDA programme. A project identification mission from the World Bank was fielded in May/June 1990. This was followed by a project preparation mission in October 1990. Further missions were fielded in September 1991 and April 1992. The consultant responsible for carrying out the project preparatory study submitted his report in July 1992. A detailed appraisal study for 11 towns was completed in March 1993 and the World Bank project appraisal completed in April 1993.

Plan of Operation

The KFW financed phase of emergency rehabilitation in the towns of Kabarole, Hoima and Masindi is expected to be completed in 1994. The subsequent phase of expansion in the six towns will take six years to complete starting in 1994.

The first consultant for the IDA phase started work in November 1991 and submitted his report in July 1992. During the preparatory study, 60 typical towns - at least one from each district, were studied and these now form the basis for the formulation of implementation mechanisms in the rest of the small/rural towns. Second consultant started work in October 1992 and submitted his reports in March 1993. Designs, procurement and supervision of the IDA component will commence by end 1993. The urban low-cost water, sanitation and waste disposal pilot project is implemented by KCC and executed by RWSG-EA of UNDP with IBRD providing technical support services.

Monitoring Report

The emergency rehabilitation of Fort-Portal town has been completed and work in Hoima is in progress while the design and preparations for work to start in the remaining KFW towns are underway. For those towns for which funding has not yet been secured, proposals have already been submitted to potential donor agencies. Implementation of the Urban Low-cost water, sanitation and waste disposal pilot project commenced in November 1992 and currently community identification, mobilisation and awareness activities are underway. The project will be reviewed annually on a tripartite basis.

PROJECT PROFILE

<u>Sector</u>	Water Infrastructure
<u>Sub-sector</u>	Studies
<u>Code</u>	WI 09(A) [formerly SI 84(N)]
<u>Title</u>	National Water Action Plan
<u>Implementing Agency</u>	Ministry of Natural Resources
<u>Total Future Cost</u>	US \$ 1.17m
<u>Total Plan Exp.</u>	US \$ 1.17m
<u>Funds Secured</u>	US \$ 0.85m
<u>Funding gap</u>	US \$ 0.32m
<u>Completion Date</u>	1995

Objectives

To introduce sustainable planning, utilization and management of the national water resources for enhanced and integrated socio-economic development.

Background

At the national level, the Water Action Plan is required in order to coordinate and examine the impact of projects (including those already executed) in the sector. The bulk of Uganda's water resources come from the Nile system, which is shared by nine countries. The riparian countries agreed on the integrated development of the basin and launched a UNDP/ECA mission to identify possible regional projects. Lack of a water resources plan has constrained Uganda's capacity to implement a regional programme in water resource development. There is inadequate information on the water supply/demand situation and on the implications of possible major development projects.

Technical Description

The project involves:

- i) analysis of the present water resources situation.
- ii) development of sectoral water demands and development plans.
- iii) assistance in drafting new water sector legislation.
- iv) development of strategies for the development and utilization of internationally shared waters, with emphasis on the River Nile system.
- v) organization, manpower and training plans for proper management of water resources at national and local levels.

Technical assistance from consultants (in water resources, computer programming, water quality, irrigation, water law, organization and manpower planning and training, and lake regulation and management) is required to execute the project.

Financing

DANIDA is financing the technical assistance, equipment and transport components.

Feasibility Studies

The UNDP/ECA mission draft report of July 1989 noted Uganda's lack of capability to implement a comprehensive regional programme of joint water resources development, including comprehensive assessment of the water resources potential, planning and eventual management.

Plan of Operations

The Action Plan exercise is estimated to take approximately 12 months. Technical assistance is required to execute the project. The project will be carried out by the Water Development Department. A foreign and local consultant are responsible for the technical execution of the project and procurement of equipment.

Monitoring Report

Phase I of the Action Plan was carried out from March to May 1993, and project reports prepared according to schedule. Phase II is planned for October 1993-June 1994 with Inception, Interim and Final Water Action Plan reports submitted to monitor progress in WAP preparation. The final WAP report will contain guidelines and procedures for monitoring the actual implementation of the Water Action Plan's recommendations.

PROJECT PROFILE

<u>Sector</u>	Water Infrastructure
<u>Sub-sector</u>	Others
<u>Code</u>	WI 07(A) [formerly SI 12 (N)]
<u>Title</u>	Establishment of national criteria/guidelines for water quality monitoring and control
<u>Implementing Agency</u>	Ministry of Natural Resources
<u>Location</u>	Countrywide
<u>Total Future Cost</u>	US\$ 1.20 m
<u>Total Plan Exp</u>	US\$ 1.20 m
<u>Funds Secured</u>	Nil
<u>Funding Gap</u>	US\$ 1.20 m
<u>Completion Date</u>	2000

Objectives

To initiate and organise an effective water quality surveillance programme. It is expected that at the end of the initial programme, both surveillance of drinking water and national water quality guidelines will have been established.

Background

Uganda lacks an organised nationwide effective programme of water quality monitoring. This has resulted in the failure to implement appropriate legislative and regulatory policies, which are fundamental in water quality management.

Government has made efforts to provide safe clean water through construction of boreholes, piped water systems, protection of springs and wells and tapping of rain water. These systems call for regular water quality monitoring.

The project is countrywide but is expected to start in nine districts viz. Kampala, Kamuli, Iganga, Luwero, Jinja, Masaka, Mbale, Mpigi and Tororo. However, emphasis will be placed on specific projects and areas where existing information has indicated water quality problems.

Technical Description

Water will be sampled at all sources in reservoirs and in all distribution systems regularly at a frequency of one sample per month. The water will be analysed for chemical, physical, and bacteriological presence at the central water quality laboratory.

Close cooperation and consultation will be made with the following agencies and departments; National Water and Sewerage Corporation, food processing and beverage industries, institutions with their own water supplies, Ministry of Health and the Government Chemist. Specifically the project requires:

- i) a laboratory fully equipped with Atomic Absorption Spectro Photometer, Analytical balances, photometer, ovens, autoclaves, specific ion analyses, spectrophotometers, bacteriological field testing kits, pH meters, conductivity meters and glass ware.
- ii) four mobile laboratories fully equipped with field testing kits. Two boats with an outboard motor, camping gear and chemicals and re-agents.

Financing

Many institutions involved in water and sanitation have shown interest in supporting this activity e.g. UNICEF, IDA, DANIDA, GTZ.

Feasibility Studies

The initial two year phase is expected to yield a report which will provide useful information and data for the main phase.

Plan of Operation

The project will last five years. In year one, activity will centre on carrying out an inventory of water sources and the population they serve. Information will be compiled on the sanitary status, chemical, physical and bacteriological quality of these water sources. In year two, a work plan will be formulated. Thereafter water quality monitoring and control will be undertaken to test the established quality criteria/guidelines and they will then be implemented countrywide.

Monitoring Report

The project has not taken off due to lack of funding. A Japanese firm Nishou Iwai has shown interest in taking it up. Some of the project requirements will be provided under the on going-water Action Plan funded by DANIDA (WI-09(A)).

PROJECT PROFILE

<u>Sector</u>	Tourism & Wildlife
<u>Subsector</u>	Tourism
<u>Code</u>	TW 08(A) [formerly EP-08(A)]
<u>Title</u>	Development Through Conservation
<u>Implementing Agency</u>	Ministry of Tourism, Wildlife & Antiquities
<u>Location</u>	Kisoro, Kabale and Rukungiri Districts
<u>Total Future Cost</u>	US\$ 2.24m
<u>Total Plan Exp.</u>	US\$ 2.24m
<u>Funds Secured</u>	US\$ 2.24m
<u>Funding Gap</u>	Nil
<u>Completion Date</u>	March 1996

Objectives

To contribute to the conservation of the Impenetrable Forest (Bwindi) and Mgahinga National Parks and to improve the natural resource based economic security of farm families in the surrounding farmlands.

Background

There is need to conserve the tropical moist forests of South West Uganda, which are of critical importance for the conservation of biological diversity, rare and endangered species, watersheds as well as for tourist development. Land users surrounding the forests, who are dependant on natural resources for their essential requirements, need assistance in sustainable land-use techniques and agricultural development.

Technical Description

The project focuses on:

- (i) institutional strengthening of local and GoU natural resources management capabilities;
- (ii) changing farmers knowledge, attitudes and practices with regard to natural conservation, and
- (iii) improving productivity of farms and forests in the project area.

Financing

The project is funded by USAID (through CARE International), up to March 1996.

Feasibility Studies

There was no feasibility study for this project but USAID/CARE financed several reports which to date form a basis for its management. The Terminal Evaluation Report for Phase I and the Mid-Term Review Report are the basic reports guiding the implementation of this project.

Plan of Operation

The project in April 1991. It is implemented by CARE in collaboration with Uganda National Parks and District Forest and Agricultural offices.

Monitoring Report

Work on this project is progressing satisfactorily.

PROJECT PROFILE

<u>Sector</u>	Tourism & Wildlife
<u>Subsector</u>	Tourism
<u>Code</u>	TW 08(B) [formerly EP-08(B)]
<u>Title</u>	Rwenzori Mountains Conservation & Development
<u>Implementing Agency</u>	Ministry of Tourism, Wildlife & Antiquities
<u>Location</u>	Kabarole, Bundibugyo, and Kasese Districts
<u>Total Future Cost</u>	US\$ 0.38m
<u>Total Plan Exp.</u>	US\$ 0.38m
<u>Funds Secured</u>	US\$ 0.38m
<u>Funding Gap</u>	Nil
<u>Completion Date</u>	1994

Objectives

The project aims to work with the Rwenzori Mountains National Park to devise a scientific and community-based conservation strategy for the Park and its surrounding areas emphasizing local participation.

Background

The Rwenzori "Mountains of the Moon" lie on the border with Zaire. The peaks represent an area of outstanding scientific importance, scenic beauty, and ecological and economic importance to the people of Uganda and the world at large. 80% of the range lies in Uganda. The land above 2,100 meters is managed as a National Park while the lower slopes are cultivated by the Bakonjo people. Surveys of the area have highlighted unsustainable use of forest products, degradation of the water catchment and population pressure.

Technical Description

Project activities include a detailed evaluation of natural resource management issues in the project area leading to preparation of the National Park's management plan. The needs and aspirations of local people are being taken into account in the formulation of this plan. The project is focusing its development component on those needs that have resulted from the restrictions imposed because of the Park. A conservation education programme has been initiated. Training will be offered to area managers, field staff, and other personnel involved with the project.

Financing

The project is funded by USAID at a total cost of US\$ 0.38m.

Feasibility Studies

The project proposal was prepared by World Wildlife Fund.

Plan of Operation

The project started in June 1991 and is due to end in August 1994. It is working in the 40 parishes of Bundibugyo, Kabarole and Kasese districts. It is being implemented by Uganda National Parks and is executed by the World Wildlife Fund.

Monitoring Report

The project has so far carried out a needs assessment involving detailed examination of the area's natural resources and extensive consultation with the local people.

PROJECT PROFILE

<u>Sector</u>	Multi-sectoral
<u>Sub-sector</u>	District Development
<u>Code</u>	MS 01(A) [formerly PA 12(N)]
<u>Title</u>	Northern Uganda Reconstruction Programme
<u>Implementing Agency</u>	Office of the Prime Minister (coordinator)
<u>Location</u>	Kitgum, Gulu, Lira, Apac, Soroti, Kumi, Pallisa, Arua, Moyo and Nebbi
<u>Total Future Cost</u>	US\$ 105.62m
<u>Total Plan Exp</u>	US\$ 42.77m
<u>Funds Secured</u>	US\$ 78.16m
<u>Funding Gap</u>	US\$ 27.46m
<u>Completion</u>	1999

Objectives

The main objective of the NURP is the short and medium term reconstruction of essential economic and social infrastructure in the north. This, coupled with improved security, would remove constraints to the resumption of productive activities by farmers and entrepreneurs.

Background

There has been instability in northern Uganda from 1986 until recently, the results of which have been death, loss of property and the destruction of vital economic and social infrastructure. This has widened the economic disparities between the north and the rest of the country. There is, therefore, urgent need to reconstruct the war-ravaged north and set off normal development in this region.

Technical Description

The programme will strengthen the capacity of local government agencies, in cooperation with NGOs operating in the area, to plan and manage the reconstruction and rehabilitation programme. Longer-term reconstruction and capacity building will be included in sector projects, thereby laying a foundation for longer-term economic and social development.

The programme will comprise projects in the fields of Agriculture; Education and Training; Feeder Roads, Highways, Telecommunications; Urban Services, Water Supply and Sanitation. Also included is a component titled Community Action Programme (CAP) which is to cover projects initiated and to be managed by communities in the three districts of West Nile.

It is recognized that for the recovery objectives of the various sectors to be achieved, urban services, and rural infrastructure, such as primary schools, urban markets and streets and feeder roads must be rehabilitated too. A Coordination and Monitoring Unit is also established under the Prime Minister's Office to facilitate programme implementation.

Financing

The tentative financing plan is as follows: IDA US\$ 71.2m; Denmark (feeder roads) US\$ 3m; Netherlands (CAP) US\$ 6.4m, GoU US\$ 10.1m. The Agriculture component will begin in October 1993, following on from the Agriculture Development Project (AG 04A). The World Bank will put more emphasis on the north and will assist GoU in identifying additional sources of financing. Project administration will cost US\$ 2.3m.

Feasibility study/report

Several documents on NURP have been produced. These have followed extensive discussions, and field visits to the programme area. They include the Government Proposal on NURP (April 1991), the World Bank identification mission report (April 1991), the Interministerial Task Force report (Sept. 1991) the IDA Staff Appraisal Report (April 1992) and the Danida studies on feeder roads (1992).

Plan of Operation

Each sector ministry will be the implementing agency of the component for which it is responsible. However, NGOs are expected to participate in the programme wherever they can contribute significantly to the implementation of the project components, and in districts where they have proved effective in bringing about positive changes. The programme Coordinating, Monitoring and Evaluation Unit (CMEU), based in the Office of the Prime Minister in Kampala, will be responsible for overall programme coordination, administration of the NURP 'Special Account' and harmonisation of policy issues and related matters. A steering committee comprising Permanent Secretaries of the relevant line ministries, the Managing Director, Uganda Posts and Telecommunications Corporation and the PS, Office of the President, make recommendations for implementation to CMEU. Implementation of the programme commenced in December 1992 and is expected to take six years, although some components will take only 2 - 3 years.

Monitoring

The national and district level CMEU were established by December 1992.

- (i) Agriculture
Implementation moved to NURP with effect from October 1993.
- (ii) CAP
Preliminary activities to prepare communities for the programme ended in August 1993. They guided the communities in preparing micro-projects to be sponsored.
- (iii) Education and training
 - (a) Rehabilitation of primary schools - work on 25 schools started in the second quarter of 1993.
 - (b) Training of untrained teachers - Contracts have been signed by the Ministry of Education for implementation.
 - (c) Technical Institutes - Procurement of the required tools is underway.
- (iv) Highways
 - (a) Regravelling - PIU is assessing the bids for this item.
 - (b) Resealing - Bids will be passed to CTB at the end of 1993.
- (v) Strategic town planning
PIU is compiling data to help in preparing land use zones.

PROJECT PROFILE

<u>Sector</u>	Multi-sectoral
<u>Sub-sector</u>	Social Development
<u>Project Code</u>	MS 08(A) [formerly SI 24(N)]
<u>Title</u>	Integrated Community Development
<u>Location</u>	Hoima District
<u>Implementing Agency</u>	Ministries of Local Government, Health, and Natural Resources
<u>Total Future Cost</u>	US \$ 6.92m
<u>Total Plan Exp</u>	US \$ 6.92m
<u>Funds Secured</u>	US \$ 6.68m
<u>Funding Gap</u>	US \$ 0.24m
<u>Completion Date</u>	1996

Objectives

- (i) to reduce the rate of mortality and morbidity in Hoima District;
- (ii) to develop a community based health care system;
- (iii) to increase the accessibility of safe water to the communities; and
- (iv) to improve small holder agricultural productivity.

Background

The project involves provision of better health facilities and development of safe water sources in Hoima District as well as provision of assistance to local communities to develop better farming skills.

Technical Description

The major components of the project are:

- (i) the development of a community based health care system;
- (ii) assistance to improve water and sanitation facilities;
- (iii) provision of technical assistance and materials for communities to maintain of their feeder roads;
- (iv) the rehabilitation of health units and refurbishment of Bulindi farm institute and Hoima rural trading centre;
- (v) training of government staff and community leaders;
- (vi) provision of credit to rural target groups through revolving credit.

Financing

The project is funded by GoU and the Belgian Survival Fund (BSF).

Feasibility Study/Report

A feasibility study funded by BSF in 1989 recommended this project.

Plan of Operation

The project is multi-sectoral and involves various ministries. The project started with Hoima and Kibale Districts and is expected to be replicated countrywide.

Monitoring Report

During 1992/93 training programmes for various agricultural community leaders and workers were conducted, and a training programme for the treasurer staff in the two districts has been prepared. Significant progress has been made at establishing a community based health care system.

PROJECT PROFILE

<u>Sector</u>	Multi-Sectoral
<u>Sub-sector</u>	District Development
<u>Code</u>	MS 02(A) [formerly PA 68(N)]
<u>Title</u>	Karamoja Development
<u>Implementing Agency</u>	Karamoja Development Agency
<u>Location</u>	Moroto and Kotido districts
<u>Total Future Cost</u>	US\$ 4.65m
<u>Total Plan Exp.</u>	US\$ 4.65m
<u>Funds Secured</u>	US\$ 3.55m
<u>Funding Gap</u>	US\$ 1.10m
<u>Completion Date</u>	1996

Objective

To combat the wide ranging physical and socio-economic problems facing the Karamajong people.

Background

Karamoja is a peculiar region with various physical and socio-economic problems not common to the rest of the country. The nature of these problems requires a multi-dimensional, integrated approach that will finally transform the socio-economic life of the Karamajong. These problems include serious degradation of the environment, lack of livestock inputs, inadequate supply of water for both livestock and people, poor farming methods, illiteracy, ignorance, etc. The Karamoja Development Programme is designed to address these problems.

This project, KDP II, is a follow-up to KDP I (1982-85) which was jointly funded by GOU and EEC. KDP I was conceived as a successor to the EEC-funded Karamoja Emergency Development Programme which was initiated after drought and famine had hit the region in 1979.

Technical Description

The project comprises the following components:

Workshop/Rural technology; Community support (regional forestry, maternity and health improvement, etc.); Technical Assistance; Assistance to Government; Administration (logistical support); Livestock improvement; Water development; Road development; and Agricultural development.

Financing

A Financing Agreement was signed in 1986 between GOU and EEC, providing US\$ 7.4m (total project cost) for funding KDP II. These funds were used to cover initial operation costs, development and recurrent expenditures. EEC has some ECU 2 million outstanding, some of which is earmarked for valley dam tanks.

Feasibility Studies/Reports

KDP II followed a 1988 consultancy report. One report (on Livestock and Water Development) by Gebre Zere was to be incorporated into another (Assessment of the Overall Work Programme for the Karamoja Development Programme) by ERL, to form a single report. This would reflect the changes that had taken place since the signing of the Financing Agreement and the 1986 Agricultural Institute of Ireland Evaluation Report on KDP I.

Plan of Operation

KDA is advising, coordinating and monitoring development activities in the region as well as providing services to implementors based on a consultative bottom-up approach.

Monitoring Report

During 1992/93 the agency operated at a low ebb as funds were disbursed for the ongoing projects only, which included; rehabilitation of Abim-Acanpii road, office building and completion of workshop in Kotido, construction of an agricultural centre at Kaabong, two valley dams and support to Micro-projects implemented through line ministries.

The remaining EEC funds are committed to permanent water reservoirs starting with 25 valley tanks.

ANNEX 19

ACTION PROFILES

ACTION PROFILES

The actions are described below in a common action profile format. Actions which are intimately related and could advantageously be implemented together are described on a common profile sheet. In the action list they are given a common number but they are distinguished by a letter.

Actions which are already in the project preparation process have been marked with an asterisk and reference is made to the project in which they are constituents. "Monitoring" refers to the project "Rehabilitation of Water Resources Monitoring and Assessment Services in Uganda" described in the Danida project identification project format in WAP Doc.002. "Lake Victoria" refers to the project "Regional Water Quality Management in the Upper Nile Basin" also described in the Danida project identification format in WAP Doc.003. The first of these projects will be appraised by a Danida mission in the near future. Profile sheets have not been included for these actions, as much more detailed information and background is provided in the project identification reports.

Actions supporting the enabling environment (Group 1)

Action	Key areas	Description
1	Policies	Prepare international water resources policy
2		Support to policy development in water resources related sectors
3		Finalize water supply and sanitation policy
4	Regulations	A: Prepare final water and wastewater permit regulations B: Develop water resources related regulations C: Prepare drilling licence regulations

Actions supporting the institutional framework (Group 2)

Action	Key areas	Description
5	Institutional development and capacity building	A: Establish Water Policy Committee and Secretariat B: Provide orientation workshops at national level
6		Establish DWD Permit Processing Unit
7		A: Integrate water resources management training within the activities of the Human Resources Development Unit B: Integrate water resources management topics within the curriculum at training institutions
8		Prepare guidelines for interaction between DWD and district administrations
9		A: Support the establishment of Environment and Natural Resources Committees B: Conduct orientation training in selected districts C: Prepare guidelines for integrated extension services
10		Conduct a study on women's potential role in the management of water resources

Actions supporting information systems (Group 3)

Action	Key areas	Description
11*	Acquisition of surface water quantity information	Rehabilitate hydrometric network ("Monitoring")
12		Collect hydrometeorological data from TECCONILE
13		Investigate water balances
14		Investigate the hydrology of wetlands
15		Prepare hydrological yearbook
16	Acquisition of surface water quality information	Describe major water pollution sources
17		Prepare EIA for sector activities
18*		Monitor major wastewater discharges ("Monitoring")
19*		Monitor water quality trends ("Monitoring")
20*		Establish water quality information system (Monitoring")
21	Acquisition of groundwater quantity information	A: Investigate recharge B: Monitor groundwater levels
22		Investigate shallow well potential
23*	Acquisition of groundwater quality information	Train in groundwater quality analyses ("Monitoring")
24*	Acquisition of land and water information	Implement sediment transport measurements ("Monitoring")
25	Data management	A: Train in use and further development of groundwater database B: Update groundwater database C: Promote use of groundwater database
26		A: Implement project information system B: Train in use of project database
27		Establish permit database and train staff

Actions supporting assessment capabilities (Group 4)

Action	Key areas	Description
28	Water quantity	Establish water resources assessment procedures
29		Train in use of hydrological assessment tools
30		Train in water balance computations
31*	Water quality	Establish water quality modelling tools ("Lake Victoria")

Actions supporting management procedures (Group 5)

Action	Key areas	Description
32	Guidelines and procedures	Prepare guidelines for design of dams and valley tanks
33		Prepare procedures for bulk water allocation to districts
34		Prepare guidelines for district water resources planning
35		Establish enforcement procedures
36		Prepare detailed definition of regulation limits and charges
37		Prepare management procedures for water resources related regulations
38		Develop code of practice
39		Promote permit systems

ACTION PROFILE

Action: I - - - - - **Prepare international water resources policy**

Background: Due to its location Uganda is both a lower and upper riparian in the Nile Basin. Ugandan interests lie within securing an equitable sharing of the water resource. Further, it is in Uganda's interest to secure that the water bodies within the country's limits maintain a quality that is consistent with present and future use of those water bodies. Presently, Uganda does not have a stated policy on how her interests are best served and by which means such a policy should be pursued.

Objective and outputs: The objective is to discuss and develop an international water resources policy that ensures an equitable sharing of the water resources of the Nile Basin between the riparians as well as a water quality adequate for the present and future use. The outputs will be a number of consolidated viewpoints and strategies to be applied in relation to participation in discussions in international Nile Basin institutions.

Tasks: The tasks include:

- formation of an international policy development task force (possibly as a subcommittee of the proposed Water Policy Committee)
- clarification and definition of Uganda's policy objectives
- definition of Uganda's requirements for international water resources
- clarification of Uganda's international obligations and present practices and modes of international cooperation
- outlining an international policy for discussion and approval by Cabinet
- preparation of strategies for policy implementation

ACTION PROFILE

Action: 2 - Support to policy development in water resources related sectors

Background: A number of sectors, including agriculture, fisheries and forestry, influence the availability and quality of the water resources of Uganda or have certain requirements to these water resources. These sectors may not all be aware of their potential impact. It is necessary to ensure that water resource interests are taken into account during the preparation of policies within such sectors.

Objective and outputs: The objective of this action is to influence the development of relevant sector policies in order to secure that such policies will comprise appropriate water resources conservation/development considerations. The output will be that water resources related sector policies are developed with a balanced view of the potential benefits and costs.

Tasks: The tasks include:

- contacts to relevant sector ministries promoting inclusion of water resources considerations in relevant parts of sector policies
- active participation in relevant sector ministries' policy development working groups to advocate consideration of the objectives and strategies of the water resources policy
- preparation of working papers on the relation between water resources conservation/development and development within relevant sectors (also including wetlands development issues as a separate item)

ACTION PROFILE**Action: 3 - Finalise Water Supply and Sanitation policy**

Background: Several water supply and sanitation related policy documents have been prepared over the recent years with varying levels of detail regarding strategies, guidelines and standards. However, no single consistent and politically approved policy document on water supply and sanitation is available at present. Considering the high level of activity within the sector and the priority accorded domestic water supply, there is a clear need to consolidate a water supply and sanitation policy. During the WAP working period, a preliminary draft of a policy for discussion has been prepared.

Objective and outputs: The objective is to finalise and obtain full approval of the water supply and sanitation policy drafted under the WAP working period. The output is expected to be a revised approved policy document which will provide an overall policy framework for this sector.

Task description: The tasks to be performed include:

- distribution of draft policy paper to relevant institutions and persons for initial comments
- individual consultations
- establishment of workshops and meetings for group discussions
- revision of document
- political approval
- distribution of final document

ACTION PROFILE

Action:	4A	-	Prepare final water and wastewater permit regulations
	4B	-	Develop water resources related regulations
	4C	-	Prepare drilling licence regulations

Background: Water legislation in Uganda is currently being reviewed and amended. To support and enforce legislation, regulations covering technical and administrative issues are needed.

As part of the WAP process, proposals for outline regulations and management procedures for water extraction and wastewater discharge have been prepared in order to support the Water Resources Statute. These outlines are being improved and transformed into legal language by NWSC consultants.

During the preparation of outline regulations, the need for a number of water resources related regulations, in addition to those covered under WAP, were identified. These concerns include hydraulic works, construction work and pollution of groundwater.

Discussions regarding privatization of drilling operations are presently ongoing. A licensing of drillers is envisaged, and in this case there would be some obligations as to water resources management imposed on the driller. Brief outlines of these obligations have been drafted as part of the WAP, but these need further elaboration and detailing.

Objective and Outputs: The objective is to contribute to an enabling environment for water resources management through development of relevant regulations to support water legislation.

The output would consist of finalized operational regulations on:

- water extraction
- wastewater discharge
- land use and zoning adjacent to rivers and streams
- activities or hydraulic structures affecting the hydrological regime
- groundwater pumping for other than water supply purposes
- disposal of solid waste
- soil disposal of wastewater
- underground storage of potential pollutants
- mining and oil exploitation
- transport of oil products and other hazardous substances
- licensing of private drillers.

Task description: The tasks will include:

- provision of technical support to the NWSC consultant responsible for the finalization of regulations on water extraction and wastewater discharge
- development of regulations on land use adjacent to rivers and streams, activities or works affecting hydrological regime, groundwater diversion, disposal of solid waste, soil disposal of wastewater, underground storage, of potential pollutants, mining and oil exploitation, and transport of oil products and other hazardous substances
- preparation of input to the regulations on licensing of drillers, with the aim to ensure that all necessary and relevant information from drilling operations are supplied to DWD, and that drilling operations and well construction are carried out according to specified standards

ACTION PROFILE

- Action:** **5A** - **Establish Water Policy Committee and Secretariat**
 5B - **Provide orientation workshop at national level**

Background: In order that water resources management functions can be implemented effectively (in accordance with Uganda's decentralization policies) an institutional structure is needed which facilitates management at the lowest appropriate levels. At the national level, there will be a need for overall policy formulation and coordination - and for a continuing review and revision of strategies for managing water resources in response to current circumstances and priorities. These will be the key enabling functions of the Water Policy Committee.

The Water Policy Committee will be established within the Ministry of Natural Resources, with the Permanent Secretary of that ministry as Chairman and the Director of Water Development as Secretary. The Committee will work closely with the NEMA, in relation to framing environmental policies and standards regarding water resources.

In the first phase of implementation, the Secretariat will be part of the Implementation Unit for the Water Action Plan. The Unit will include those consultants and counterpart staff working to establish new structures and facilitate orientation programmes, as well as managing proposed projects related to the Water Action Plan. The Secretariat will maintain close contacts to the relevant sector ministries through designated liaison officers.

Objective and outputs: The objective is to ensure that water resource policies and plans can be formulated and revised at both the national and international levels and facilitate the action programme of the Water Action Plan.

The outputs will be an established Water Policy Committee; an established Water Action Plan Implementation Unit, including the Secretariat for the Water Policy Committee; guidelines for the operation of the Water Policy Committee and the Secretariat; an orientation training workshop for members of the Water Policy Committee, and seminars for senior staff of DWD and relevant ministries.

Task description: To accomplish these objectives and produce these outputs it will be necessary to:

- prepare constitution and guidelines for both the Water Policy Committee and its Secretariat

- identify office space and provide required equipment for the Secretariat and the Water Action Plan Implementation Unit
- establish membership of the Water Policy Committee, including identification of the liaison persons in relevant ministries and institutions
- appoint senior and support staff of the Secretariat
- design activities and materials for the Water Policy Committee orientation workshops, and seminars for staff of DWD and staff from ministries responsible for among others agriculture, community development, forestry, fisheries and health
- conduct the orientation workshop and seminars

ACTION PROFILE

Action: 6 - Establish DWD Permit Processing Unit

Background: For conservation, protection and equitable use of water resources, it is vital to have effective regulatory machinery in place and the capacity to operate that machinery. As a basis for a water resources management system, it is important to have information about available resources and potential future demands. Then a system is needed which controls significant extractions from those resources and regulates harmful discharges into them.

Objective and outputs: The main objective will be to establish an easily managed and effective permit system. This would involve appropriate fees and charges for the regulation of large-scale extractions from both surface and groundwater sources and the regulation of wastewater discharge.

The output will be a functioning Permit Processing Unit within DWD.

Task description: To establish such a unit, it will be necessary to:

- appoint two members of the professional staff from DWD who will manage the Permit Processing Unit and select their appropriate support staff
- secure office space for the Unit and provide necessary equipment
- familiarize the staff with the permit procedures and criteria for determination/acquisition
- prepare more specific information for the district administrations - and conduct briefing meetings with those officers within the district administrations who will be involved in operating the permit system

ACTION PROFILE

- Action:**
- 7A - **Integrate water resources management training within the activities of the Human Resources Development Unit**
 - 7B - **Integrate water resources management topics within the curriculum of training institutions**

Background: If a Human Resource Development Unit (HRDSU) is established within the Training Section of DWD it would provide important opportunities for developing activities and materials related to water resources management, training staff, committee and user group members, and for disseminating information to the general public. Also, given that there has been very little emphasis on water resources management issues (as opposed to water supply issues) in the training of staff involved in the water and sanitation sector, special effort should now be made to influence the curricula at the relevant training institutions. This will be particularly important as a support to the possible integration or coordination of extension services within the districts.

Objective and outputs: The main objective is to support the HRDSU in designing and implementing training activities related to water resources management and addressed to staff of the water and sanitation sector employed by ministries, the district administrations and NGOs.

The output would include; designs for in-service training units on water resources management for specific groups of staff and people active within the water and sanitation sector; educational and information materials, targeted to either specific groups or to the general public; curriculum components on water resources management topics for relevant pre-service programmes.

Task description: To achieve these objectives and outputs, it would be necessary to:

- deploy staff with the appropriate technical and training design skills within HRDSU
- prepare a variety of training designs and associated training materials on water resources management
- prepare series of information materials on water resources management targeted to the public
- liaise with directing staff of those institutions which train staff for sectors such as agriculture, community development, fisheries, forestry and health

- conduct a series of curriculum design and material development workshops with relevant teaching staff from these institutions

- prepare curriculum components on water resources management (topics, methods and materials) relevant to various cadres who will be working in sectors related to water

ACTION PROFILE

Action: 8 - Prepare guidelines for interaction between DWD and district administrations

Background: The water Resources Statute, the Water Supply and Sewerage Statute and their subsidiary Regulations, specify the roles and responsibilities of the Directorate of Water Development and the district administrations with regard to water resources management and water supply services. These provisions are in accordance with the Local Governments (Resistance Councils) Statute, 1993, regarding decentralization.

Decentralization has resulted in the districts being responsible for water supply services, subject to supervision and approval by the central government (DWD), while the central government is responsible for water resources. Water resources management, however, requires actions and decisions to be taken at the district and local levels as well as at the national level. Therefore, the district administrations also have a role to play with regard to water resources management.

Objective and outputs: The objective is to assist the district administrations in having an understanding of the issues involved and in the role they can play in water resources management. The main output will be a set of guidelines to this end, which identify main water resources management issues; describe the water resources management functions that the districts will need to carry out; advise on the most appropriate form of committee structure for implementing and overseeing these functions.

Task description: To produce an agreed set of guidelines, an iterative process should be followed, in which:

- the Implementation Unit of the Water Action Plan prepares the first draft
- this draft is discussed and amended in a workshop which involves key members of DWD, some District Executive Officers and other district-based staff representative of those who will have roles in water resources management
- an amended set of guidelines is prepared by the Implementation Unit for the approval of the Water Policy Committee

ACTION PROFILE**Action:**

- 9A - Support the establishment of Environment and Natural Resources Committees**
- 9B - Conduct orientation training in selected districts**
- 9C - Prepare guidelines for integrated extension services**

Background: The decentralization process provides an opportunity for a rationalization of services as well as scope for increased democracy in decision making. It calls for imaginative training initiatives. In relation to water resources management, there are needs parallel to those at the national level: orientations for members of policy making committees and local government officials; in-service training for staff who have responsibilities for addressing a wide range of environmental problems.

Objective and outputs: The objective will be to support district administrations in establishing either the recommended District Environment and Natural Resources Committee or another committee particular districts consider most appropriate to deal with water resources management issues coordinate extension services concerned with environmental matters, and provide orientation training for members and extension staff of these committees.

The outputs will be functioning committees at the district level (integrated with the overall district administrations) with special responsibilities for framing district policy on water resources management, prioritizing issues and coordinating extension services; guidelines for the operation of these committees; orientation training programmes for committee members; integrated extension services related to environmental management; guidelines on how this integration could take place; in-service training programmes on water resources management for extension staff working the sectors of water, agriculture, community development, fisheries, forestry and health; reorientation programmes for district Water Officers in order to assist them in carrying out their new water resources management tasks.

Task description: To achieve the objective and the outputs, in the first instance it will only be logistically feasible to work in a limited number of districts. For example, five districts, representative of the range of water resources problems and potentials, could be selected. The key tasks will be:

- the Implementation Unit prepares guidelines for the establishment of District Environment and Natural Resources Committees: including advice on membership, responsibilities and procedures

- the Implementation Unit, in association with the HRDSU of DWD's Training Section, designs an orientation training programme, complete with related materials for DENRC members
- the programme is tried out and subsequently revised in workshops within the selected districts
- the Water Action Plan Implementation Unit designs guidelines and associated training materials on the establishment and operation of an integrated extension strategy
- the Implementation Unit, in association with HRDSU, implements training workshops for district-based extension staff within the selected districts
- follow-up workshops are held as "training-the-trainers" occasions, facilitating the take-up of the training by unit heads of the District Environment and Natural Resources Department and members of the DENRC
- the Implementation Unit designs and conducts a workshop series for District Water Officers, based on the competencies they will require for performing water resources management functions

ACTION PROFILE

Action: 10 - Conduct study on women's potential role in the management of water resources

Background: One of the seven guiding principles on water resources management that has come from the Copenhagen-Dublin-Rio de Janeiro conferences on the environment is that women play a central role in the provision, management and safeguarding of water. However, it appears that women may be very active in providing and using water, but they are far less involved in its management. This is a point that has been reinforced by the district studies. Despite the gender-aware policies of authorities in Uganda and the regulations that stipulate proportionate membership on all levels of RCs and other public bodies, women are rarely found in the authority positions of chairperson or secretary, particularly in the broad middle band of the hierarchy of committees. The impression is that women are often present, but they are not so often involved in making decisions.

It is desirable to increase women's participation, not just for reasons of social equity, but because they are likely to have a unique and valuable perspective on the problems associated with gaining access to and most efficiently using water resources.

Objective and outputs: The objective of the study would be to explore the degree to which women are actually involved in decision making in water resources management forums and to gain insight from those spheres where women have a higher profile. The output would be recommendations on how women's more "managerial" participation in water resources management can be facilitated.

Task description: The following tasks, among others, would be carried out:

- observe and analyse the degree to which women are currently participating in the various groups and committees involved in water resources management -at the national, district and community levels
- consult with agencies such as the Ministry of Women in Development, and NGOs with close experience of interactions at grass roots, to identify significant factors affecting women's participation in social and economic development activities
- identify spheres where women are involved in a more decision making capacity and analyse causal and facilitating factors in their involvement
- make recommendations regarding facilitating strategies that could be used to encourage and enable women to take on managerial functions in relation to the conservation, utilisation and protection of water resources

ACTION PROFILE

Action: 12 - Collect hydrometeorological data from TECCONILE

Background: The headquarters of the Technical Co-operation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin (TECCONILE) is situated in Entebbe. Despite this, the major part of hydrometeorologic data collected during the intensive activities of HYDROMET are stored in Nairobi in computerized files. It is a vital source of information on Uganda's water resources and should be readily available to DWD. Presently, data are only extracted from the base upon personal visits and payments of charges to the Meteorologic Department in Nairobi.

Objective and outputs: The objective is to ease access to data of importance for water resources assessments in Uganda. The output will be a fully operational database on all existing hydrometeorologic data within the Ministry of Natural Resources.

Task description: The tasks will include:

- establish the extent of data stored in Nairobi which is vital to Uganda
- explore means of data transfer and requirements for this transfer
- effect transfer and organise data files in an easily accessible format consistent with Ugandan national databases

ACTION PROFILE**Action: 13 - Investigate water balances**

Background: Information on rainfall, runoff and evaporation, especially in minor catchment in dry areas is lacking. The national hydrometric data collection system has virtually collapsed, leaving only a few operational stations and big gaps in the historical series of hydrometeorological data. Information on the impacts from various land uses on the water resources are lacking as well. Detailed water balance studies are constrained by lack of adequately trained staff and lack of necessary hydrological tools.

Objectives and outputs: The objective is to provide DWD with hydrological tools and trained staff qualified to carry out detailed water balance studies.

The output would be a strengthened DWD capability within water balance studies and guidelines for sustainable utilization of water resources, including integrated soil and water management.

Task descriptions: The task to be carried out would include:

- studies on climate, rainfall and evaporation
- studies of soil texture and structure
- studies of geology and hydrogeology
- studies of topography and drainage patterns
- studies of land cover/land use
- synthesis of outputs of component studies into estimates of water resources availability and variability, and conclusions regarding sustainable water resources management

ACTION PROFILE

Action: 14 - Investigate the hydrology of wetlands

Background: Approximately 10% of Uganda is covered by wetlands, out of which 2/3 are seasonally flooded while the remainder is permanently flooded. The presence of these extensive wetlands has a significant influence on the water yield of the Ugandan river basins. The main hydrological effects related to the large water retaining capacity of wetlands are a reduction of peak flows, settling of suspended sediment and increased evapotranspiration.

There is a potential for irrigated agriculture at the wetlands and in the seasonally flooded areas. The extent of the utilization of the wetlands has increased within the last years. However, there is a lack of quantitative knowledge on how wetlands affect the hydrological regime.

Objective and outputs: The objective is to assess the hydrologic effects of wetlands and the impact from increased wetland cultivation. The output will be an improved knowledge on the role of wetlands in the hydrological cycle and information on the impact from wetland cultivation/irrigation on the hydrological regime.

Task descriptions: The tasks to be undertaken will include:

- selection of representative wetlands
- instrumentation and data collection on hydrologic and land use parameters
- data analysis and modelling/simulation of wetland effects
- conclusions on the role of wetlands and wetland cultivation in the hydrologic cycle

ACTION PROFILE**Action: 15 - Prepare hydrological yearbook**

Background: The surface water resource database has been updated during the WAP working period to include all available data. Although most of the data is from the period preceding the civil unrest, it still represents the best available knowledge on the hydrological regime of the rivers and streams of Uganda and are as such a very valuable source of information for water resources management. The availability of this information is not known to any great extent by potential users. Water resources management decisions may be made on a basis that could be improved utilizing such knowledge.

Objective and outputs: The objective of this action is to improve knowledge about availability of hydrological information among potential users through the preparation of and distribution of a publication which informs potential users of surface water resource information about the extent of data availability. The output will be that decision processes are enhanced and rationalized.

Tasks: The tasks will include:

- preparation of lay-out of publication taking into account that such publication may develop into a regularly issued yearbook
- production of publication inputs in terms of an overview of stations, station data, periods of operation and availability of data
- presentation of data series for all national stations for actual year with average figures for comparison
- reproduction of yearbook and distribution to relevant institutions and users

ACTION PROFILE

Action: 16 - Describe major water pollution sources

Background: The assessment of cause/effect relations regarding pollution impacts on water resources, as well as cost effective decisions on possible abatement measures, require adequate knowledge regarding the state of the quality of the water bodies on the one hand and a precise description of the actual pollution sources on the other. Thus ideally, information should exist regarding both the chemical composition and the wastewater discharged for each individual pollution source.

In Uganda today, this type of information is very scarce and the capacity for chemical characterisation and quantification has been minimal for many years.

Objective and outputs: The objective is to provide DWD (and NEMA) with detailed information on significant water pollution sources in Uganda.

The output will be a register of major pollution sources (point and non-point sources) including information on the polluting activity, identification of receiving waters, chemical composition of effluents and estimates of quantities released to the receiving water (including variation in time).

Tasks: The tasks to be carried out include:

- screening of possible water pollution sources in Uganda
- identification of those sources likely to have a significant impact on the quality of the receiving water (either individually or through combined effects)
- description of the polluting activity including type and level of pollution reduction measures that possibly can be applied
- estimation of quantities of pollutants released based on concentrations and effluent discharge rates

ACTION PROFILE**Action: 17 - Prepare EIA for sector activities**

Background: The development in Uganda is taking place through a large number of activities and projects within all sectors. Many of these activities may impact the environment through physical modifications of landscapes, modifications of land use, waste production, etc. To secure an environmentally sustainable development of the country it is necessary to be able to prioritise activities according to their secure protection of the natural resources. A prerequisite for prioritizing or making modifications is that adequate information on the possible impacts is available (Environmental Impact Assessments). As the impact on the water resources is an integral part of such assessments, they are fundamental for an efficient water resources management.

EIA's of development activities are generally not done in Uganda. Procedures and capacity for such assessments have not been available so far. However, under the framework of the National Environment Action Plan (NEAP) and the Water Action Plan such procedures for enabling EIA's are under preparation.

Objective and outputs: The objective is to provide information on the possible impact on the environment from development activities within the various sectors of Uganda.

The results will be a catalogue of major ongoing and planned sector development impacts on the environment including the water resources.

Tasks: Among the tasks to be undertaken are:

- screening of ongoing and planned development activities in the various sectors
- classification of development activities according to necessary level of environmental impact assessment (according to NEAP guidelines)
- performing general environmental impact assessments on development activities according to a selected classification

ACTION PROFILE

- Action:** 21A - Investigate recharge
 21B - Monitor groundwater levels

Background: Groundwater recharge estimates are rather difficult to make and will always involve an element of interpretation. However, they are crucial to the design of well fields and to the assessment of the sustainable yield of an aquifer. Although intensive groundwater development for rural water supply has been going on in recent years, recharge estimates have only been made in a few cases. Recharge estimates can be made in a variety of ways, but one way is to monitor groundwater levels and correlate the amount of water added (to the groundwater reservoir) to the rainfall in the area.

Objective and outputs: The objective is to assist the planning of groundwater schemes through improved recharge estimates. The output would be estimates of recharge in different climatic zones in Uganda.

Tasks: In order to achieve the outputs the necessary tasks to be carried out include:

- select an appropriate number of boreholes for monitoring of groundwater levels and institute monitoring of levels at regular intervals
- select reliable rainfall stations near the boreholes and establish reporting procedure
- compare rainfall with amount of groundwater added to the aquifer (calculated based on an assumed soil porosity)
- calculate recharge as a percentage of rainfall and regionalize results to produce estimates for the Ugandan territory

ACTION PROFILE**Action: 22 - Investigate shallow well potential**

Background: The construction of protected shallow dug wells is a fairly recent development in Uganda. The construction techniques applied can generally be used to depths of 5-8 metres. Handaugering and drill rig auguring is also used. The development of shallow dug wells requires favourable conditions of high water levels and permeability at shallow depths. If large fluctuations in groundwater levels occur there is a risk that the shallow well will run dry during seasons of low rainfall. Thus, there is a need to document the groundwater fluctuations in different hydrogeologic environments.

Objective and outputs: The objective is to assess the shallow well potential and establish its role in the rural water supply. The output will be a number of water level fluctuation measurements and estimates of the permeability at shallow depths leading to a general assessment of the potential of shallow wells.

Tasks: The tasks to be carried out in order to reach the objective will include:

- collect and study information on shallow well performance from relevant organizations
- initiate water level monitoring in selected shallow wells
- establish the importance of shallow wells in the rural water supply

ACTION PROFILE

- Action:**
- 25A - Train in use and further development of groundwater database**
 - 25B - Update groundwater database**
 - 25C - Promote use of groundwater database**

Background: A groundwater database has been prepared under WAP and updating is currently being done at DWD. This database will serve as a tool for collection, dissemination and utilisation of hydrogeological knowledge. However, the groundwater database needs to be finalised and a database manager(s) has to be trained in order to obtain maximum benefit from the data collected and to develop the groundwater database further according to needs. There is a need for an information flow between DWD and relevant organisations. Organisations/groundwater projects should provide DWD with standardised data in order to ensure a continuous updating of the groundwater database and DWD should provide data reports to planners and implementers.

Objective and outputs: The objective is to improve knowledge on groundwater and hydrogeology and guide planning and implementation of groundwater based water supply projects.

The output will be DWD staff trained in advanced use and development of the database, a comprehensive updated groundwater database, and information flow from the database to groundwater project planners and implementers.

Task description:

- training of database manager(s),
- continuous updating and development of the groundwater database
- distribution of information from the groundwater database to relevant organisations and promotion of the use
- standardization of groundwater quality data generation and storage
- making information readily accessible for drillers and other developers
- promotion and enforcement of the use of standard reporting format for all groundwater developers

ACTION PROFILE

Action: **26A - Implement project information system**
 26B - Train in use of project database

Background: The continuous updating of the Water Action Plan and the need for an overview of water resources related projects necessitates an efficient and quick-reaction information system with a network comprising all water resources related ministries. An important part of such system is a database where changes and additions can be made rapidly and where project and action lists and summaries are parts of standard reports.

Objective and outputs: The objective is to enable the WAP Implementation Unit to track and record water resources related project information. The output will comprise a network of contact persons, a linkage to the Ministry of Finance and Economic Planning and a project/action database with staff trained in its use.

Tasks: The tasks necessary to reach the objective will comprise, among others, the following:

- establish network of contact persons in water resources relevant ministries and organizations
- establish linkage to Ministry of Finance and Economic Planning
- introduce procedures for exchange of information in the network
- develop project/action database and prepare documentation
- update database and prepare standard reports
- train staff in the use and further development of the database

ACTION PROFILE

Action: 27 - Establish permit databases and train staff

Background: Permit systems for water extraction and wastewater discharge are provided for in the draft Water Resources Statute and have been further elaborated under WAP. Management of water extraction and wastewater discharge will imply handling a number of permits and registrations. Information on existing permits may often be needed for reference or comparison. In order to maximise the benefits of this information, establishment of two databases within DWD is recommended. The two necessary databases are a water extraction permit/registration database and a wastewater discharge permit database.

Objective and outputs: The objective is to facilitate use of information contained in water extraction permits/registrations and wastewater discharge permits through establishment and training in use of permit/registration databases.

The result will be two operational databases in DWD for permits/registration of water extraction and wastewater discharge, and DWD staff trained in operation of the databases.

Task description: Among the tasks to be undertaken are:

- definition of information to be stored in the databases
- specification of user requirements
- development of the databases in a format that is compatible with other DWD databases
- training of DWD staff in use of the databases

ACTION PROFILE

Action: 28 - Establish water resources assessment procedures

Background: The processing of permits (water or wastewater) requires an assessment of the impacts and consequences of the planned intervention. This is essential to the sustainable allocation and use of the water resources of Uganda. In addition, expertise on general water resources assessments that can support project planning need to be present in DWD. The National Environmental Action Plan process has defined Environmental Impact Assessment procedures. These, by their nature, deals only with the impact of a defined activity on the environment and do not include trade-offs between economic benefits and environmental costs, neither are they treating water as an economic good. Although it is not the

Objective and outputs: The objective of this action is to ensure that coherent assessments are made for major water resources development projects considering sustainability and water as an economic good. The outputs will be a set of guidelines, procedures and methods of analysis.

Tasks: The tasks to be carried out in order to produce the required output comprise, among others, the following:

- defining procedures for assessment of the hydrological regime in terms of, for instance, characteristic minimum flows (dependable yield)
- defining procedures for assessment of the impact on the hydrological regime of extracting water from the particular water body or discharging wastewater
- defining procedures for assessment of the ecological impact of reduced flows or of changes in water quality
- defining procedures for comparative project assessments based on water as an economic good, direct costs, opportunity costs and environmental costs

ACTION PROFILE

Action 29 - Train in use of hydrological assessment tools

Background: The role of DWD, as the body responsible for water resources assessments has to be backed up by a broad expertise in hydrologic analyses using up-to-date mathematical modelling and computer tools.

Objective and outputs: The objective of this action is to develop skills in hydrologic analysis within the Department of Water Resources. The output will be an appropriate number of staff with expertise in using hydrological software and applying computer and other techniques to water resources assessments.

Tasks: The tasks to be carried out in order to achieve the objectives will comprise, among others, the following:

- assessment of training needs seen from the perspective of the need for water resources assessments
- preparation of training programme and curricula
- acquisition of software and arranging the necessary computer facilities. The software will comprise simulation models, statistical tools and other analytical-computer programmes
- implementation of training programme and evaluation of effect
- follow-up on training during practical applications

ACTION PROFILE

Action: 30 - Train in water balance computations

Background: Water balance computations are essential for management of water resources as they will show the availability of water within, for instance, a given catchment area. The situation where the districts will have a certain responsibility to allocate water resources from a major allocation from the DWD will require a careful evaluation of the general water balances.

Objective and outputs: The objective of this action is to develop skills in water balance computations within Department of Water Resources. The output will be an appropriate number of staff with expertise in water balance computations applying hydrological software, computers and analytical techniques to water resources assessments.

Tasks: The tasks to be carried out in order to achieve the objectives will comprise, among others, the following:

- assessment of training needs seen in the perspective of the need for water balance computations
- preparation of training programme and curricula
- acquisition of software and arranging the necessary computer facilities.
- implementation of training programme and evaluation of effect
- follow-up on training during practical applications

ACTION PROFILE

Action: 32 - **Prepare guidelines for design of dams and valley tanks**

Background: In dry areas, rivers are generally seasonal, ground water potentials might be limited, and low yields and small recharge rates are likely. In many cases surface storage reservoirs (dams and valley tanks) have insufficient inflow or have too small a storage capacity to prevent them from drying out.

The dry areas are generally used as rangelands and scarcity of effective surface storage reservoirs increases the strain on the few perennial reservoirs where big herds gather. Overgrazing and degradation of surrounding areas are among the consequences.

Objective and outputs: The objective is to improve reliability of water supply for livestock in dry areas, through improved design of dams and valley tanks and other water conservation measures.

The output will be design guidelines for small surface storage reservoirs.

Task description: Among the tasks to be carried out are:

- investigations of present design practices
- establishment of hydrologic and hydraulic design criteria
- establishment of structural design guides
- development of guides for desilting, water abstraction for livestock and domestic use, operation and maintenance, etc

ACTION PROFILE

Action: 33 - Prepare procedures for bulk water allocation to districts

Background: At present, virtually all water resources management takes place at the central level, (DWD). The Water Action Plan envisages that, in the long term, DWD will delegate the authority to grant water extraction permits to the district level. This will necessitate an allocated amount for water extraction for each district, distributed on river basins and lakes.

Objective and outputs: The objective is to facilitate decentralization of water resources management through development of procedures for delegation of authority to issue water extraction permits from DWD to district level. The output will be a procedure describing the principles, according to which DWD will allocate authority to grant water extraction permits to the district level.

Task description: The tasks to be undertaken will comprise among others,

- definition of criteria for when impacts on water resources can be considered local and when more districts have to be involved on a catchment basis
- definition of responsibilities and obligations between DWD and districts such as the obligation of the districts to report to DWD

ACTION PROFILE

Action: 34 - Prepare guidelines for district water resources planning

Background: Under the Water Action Plan, it is proposed that water resources management functions should gradually be transferred from DWD to district level in step with development of district management capacity. In order to support the districts in taking up this responsibility, it is recommended that guidelines for water resources planning and management at district level be developed and that water resources planning is made an integral part of district development plans.

Objective and outputs: The objective is to develop guidelines for district water resources planning and management. The output will be a set of operational guidelines describing basic planning tools and procedures relevant to the district context.

Task description: The tasks to be undertaken comprise development of guidelines. The following aspects have to be covered:

- definition of responsibilities and mandates, DWD viz districts.
- tools for assessment of the state (quantity and quality) of water resources
- tools for prioritization within water resources management, e.g. how to apply the principle of water as a social and economic good

ACTION PROFILE**Action: 35 - Establish enforcement procedures**

Background: As part of the WAP preparation, outline regulations and management procedures for water extraction and wastewater discharge have been proposed. However, no system for enforcement of the regulations exist. One of the principles behind WAP is to make regulations and rules in step with enforcement capacity building. Therefore, procedures for enforcement need to be established before the regulations can come into effect.

Objective and outputs: The objective is to develop enforcement capacity through guidelines, procedures and instruction. The outputs of these activities will be a set of procedures for enforcement of regulations for both water extraction and wastewater discharge.

Task description: The tasks to be carried out will comprise among others,

- identification of functions to be carried out as part of enforcement of the regulations, e.g. administration, inspection and control
- assessment staff requirements, in terms of qualifications and number, to perform the defined functions
- establishment of procedures and guidelines for enforcement of the water extraction and wastewater discharge regulations, assigning responsibilities for all defined enforcement functions, and specifying penalties for non-compliance with regulations

ACTION PROFILE

Action: 36 - Prepare detailed regulation limits and charges

Background: As part of the WAP preparation, proposals for outline regulations and management procedures for water extraction and wastewater discharge have been prepared. In these regulations, exact figures for a number of threshold levels (e.g., size of fish ponds requiring a water extraction permit, charges for water extraction) have been left open because the available basis for decision-making has presently been deemed insufficient. Before the regulations can come into effect, these figures have to be defined and agreed within DWD.

Objective and Outputs: The objective is to define appropriate limits and thresholds for activities requiring permits or registration according to regulations on water extraction and wastewater discharge, to define administrative fees and charges for services provided under these regulations, and to define penalties for non-compliance with the regulations.

The output will be a set of detailed limits and thresholds, fees, charges and penalties for inclusion in the water extraction and wastewater discharge regulations.

Task description: Among the tasks to be carried out are:

- definition of limits and thresholds for activities requiring permits or registration under the regulations for water extraction and wastewater discharge, taking into account the impact on the water resources as well as the administrative capacity within DWD
- definition of administrative fees, annual charges for water extraction and wastewater discharge charges and penalties for non-compliance, based on the principle of water as a social and economic good

ACTION PROFILE

Action: 37 - Prepare Management procedures for water resources related regulations

Background: Water legislation in Uganda is currently being reviewed and amended. In order to support and enforce legislation, regulations covering technical and administrative issues are needed.

During the preparation of WAP, the need for a number of water resources related regulations, in addition to those covered under WAP, were identified. These concerns include hydraulic works, construction work and pollution of groundwater.

After formulation, these regulations need to be supplemented by management procedures on how to process and determine applications for permits.

Objective and outputs: The objective is to contribute to an enabling environment for water resources management, through development of management procedures for water related regulations (other than water extraction and wastewater discharge regulations).

The output will be management procedures describing administrative procedures to be followed by DWD and other involved authorities in water resources management. The procedures will cover the following:

- land use and zoning adjacent to rivers and streams
- activities or hydraulic structures affecting the hydrological regime
- groundwater pumping for purposes other than domestic water supply:
- disposal of solid waste
- land disposal of wastewater
- underground storage of potential pollutants.
- mining and oil exploitation
- transport of oil products and other hazardous substances

Task description:

- define the necessary management functions for fulfilment of administrative obligations by DWD and other relevant authorities according to the regulations
- assess the existing and foreseeable future capacity within DWD and other relevant authorities for enforcement of regulations on water related issues
- describe the appropriate levels for management functions concerning enforcement of the above regulations
- develop management procedures and guidelines for water resources related regulations

ACTION PROFILE

Action: 38 - Develop code of practice

Background: Under the outline regulations and management procedures prepared as part of the WAP, it is proposed that an "Advisory Code of Practice for the Discharge of Wastewater, under the Regulations for Wastewater Discharge" be developed. This code of practice will be used in the determination of applications made under the regulations and will be a guide to industries and other applicants for wastewater discharge permits on the typical requirements to wastewater treatment.

Objective and outputs: The objective is to create a basis of common understanding between wastewater dischargers and regulatory authorities on the principles of assessing applications for wastewater discharge permits.

The output will be a guiding document entitled "Advisory Code of Practice for the Discharge of Wastewater, under the Regulations for Wastewater Discharge".

Task description: The Code of Practice should include, but not necessarily be restricted to, the following:

- wastewater quality standards/guidelines for activities which requires a wastewater discharge permit
- guidelines on treatment techniques suitable to accomplish satisfactory treatment of wastewater
- special considerations in case of discharge to environmentally sensitive recipients
- criteria for when an environmental impact assessment (EIA) is necessary, and procedures to be followed when conducting an EIA (coordination with NEAP/NEMA, summary of formal technical requirements to an EIA, responsibility for submitting reports, time limits, etc.)

The Code should be developed and negotiated in collaboration with representatives of producers who will potentially be required to obtain a wastewater discharge permit.

ACTION PROFILE

Action: 39 - Promote permit systems

Background: The draft Water Resources Statute provides for introduction of water extraction permits and wastewater discharge permits in Uganda. Under WAP, outline regulations and management procedures covering such permits have been proposed. Currently, finalization of the regulations is underway with input from NWSC consultants. Having finalized the regulations, the next step is introduction of the permit systems. However, since the awareness on water legislation within the industry and the population in general is not very high, it may be necessary to raise awareness before introducing the systems. A condition for the success of permit systems is that those under regulation know the basis of the rules applying to them.

Objective and outputs: The objective is to create a general awareness of permit systems for water extraction and wastewater discharge.

The output will be a general acknowledgement among major water users and industries of the need for permits for water extraction and wastewater discharge.

Task description: The tasks to be completed include:

- preparation of publications providing a brief overview of the permits system; rights and obligations of water users and dischargers; aims and goals of the permit systems
- meetings, seminars and workshops with participation of relevant parties such as major water users and effluent producing industries.

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