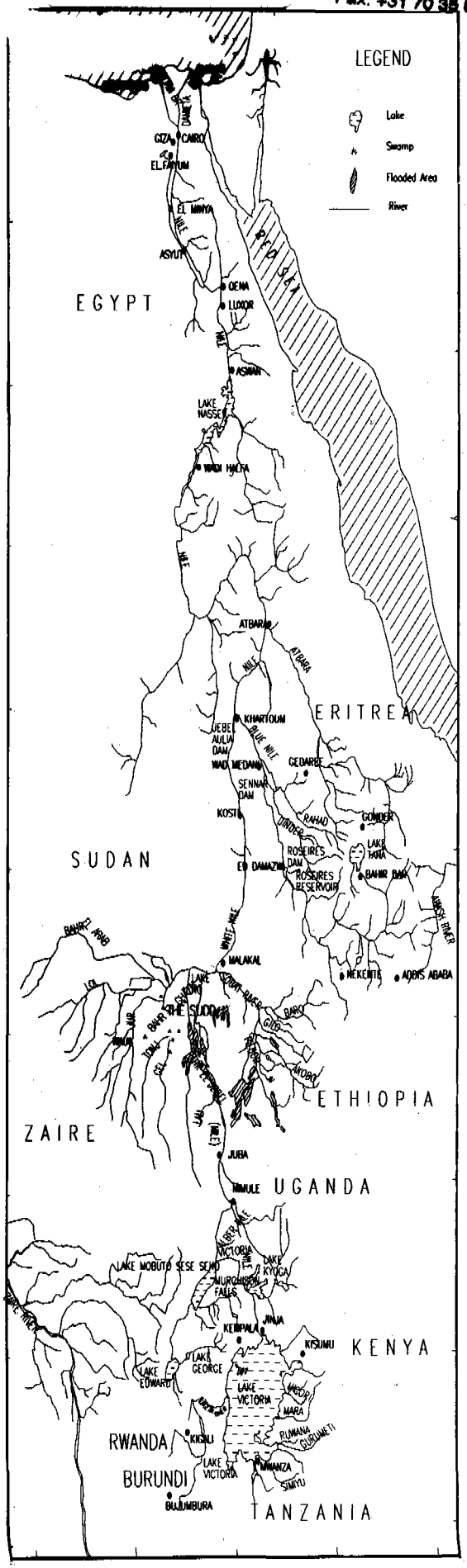

NILE RIVER BASIN

DRAFT ACTION PLAN

Technical Co-operation Committee
for the Promotion of the
Development and Environmental
Protection of the Nile Basin

TECCONILE

OCTOBER, 1994

NILE RIVER BASIN

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TECCONILE

October 1994

CW1373.00

AGRA
Earth & Environmental

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October 20, 1994
Project: CW1373.101

Mr. M.M. El Amin, Director
TECCONILE
P.O. Box 192
Entebbe, Uganda

Dear Sir:

Re: Nile River Basin, Draft Action Plan

We have the pleasure of transmitting to you this report entitled "Nile River Basin, Draft Action Plan." This report presents the components and activities of the Action Plan as discussed and agreed in principle by the country participants at the workshop in Entebbe, Uganda, during June 13 to 15, 1994. The report is complete with project descriptions, estimated budgets, schedules, and conclusions.

In accordance with our contract with CIDA, and your concurrence, we are forwarding copies to TECCONILE and directly to TC members and country observers in their offices.

The report was prepared by the following authors with a great deal of direction and assistance from Mr. Brian Grover of CIDA:

- Mr. A. T. McPhail - President, McPhail & Associates Inc., as consultant to AGRA Earth & Environmental Limited.
- Mr. I. Najjar, President, Hydrosult Inc.
- Mr. B. Lukey, Director of Engineering and Sustainability Service, Canada Department of Agriculture and Agri-food, PFRA.
- Mr. G. Gillis, President, SPIDER International Ltd., provided the information on the Nile River Basin Atlas.
- Mr. J. Henderson, Senior Coordinator, SPIDER International Ltd., provided assistance on the Atlas information and overall report editing.
- Mr. H. Hill, Executive Director, Canada Department of Agriculture and Agri-food, PFRA, provided report review and overall advice on project scope and direction.

We are looking forward to working with the representatives of the Nile River basin countries and TECCONILE to review and revise this report the Cairo workshop from November 19 to 21, 1994.

Yours very truly,

A.T. McPhail, P.Eng.
Team Leader

R.C. Wouts, P.Eng.
Corporate Manager

cc: Brian Grover, CIDA
Aly Shady, CIDA

Ref: 1373/L101094.1LD

EXECUTIVE SUMMARY

1.0 BACKGROUND

This report presents a program that would promote a comprehensive cooperative framework for water management in the Nile River Basin. Growing populations, limited water resources and water pollution pose potential threats to the social and economic well being of Nilotic countries.

Ministers responsible for water affairs in the Nile basin countries met in Kampala, Uganda in December 1992 and agreed that future cooperation on water resource matters should be pursued. They agreed that these matters should be pursued over a three year transitional period under the "Technical Cooperation for the Promotion of the Development and Environmental Protection of the Nile Basin", or "TECCONILE". An Agreement to this effect was signed by Ministers from the six countries of Egypt, Rwanda, Sudan, Tanzania, Uganda and Zaire.

Following one additional ministerial meeting and two international conferences (Nile 2002 Conference), the Nile countries agreed on a list of practical measures for supporting regional cooperation in water management. The Canadian International Development Agency (CIDA) agreed to provide support for four of the measures. This report considers two of those measures:

- preparation of an Action Plan; and
- development of a Water Resources Atlas for the Nile basin.

A workshop, sponsored by CIDA, was held in Entebbe, Uganda in June 1994. The main purpose of the workshop was to develop an Action Plan for the Nile River Basin. Representatives from Egypt, Ethiopia, Sudan, Tanzania, Uganda and Zaire participated in the workshop.

2.0 THE ACTION PLAN

The Action Plan, as initiated and agreed to by the country participants, at the Entebbe workshop contains the following five components.

A. Integrated Water Resources Planning and Management
B. Capacity Building
C. Training
D. Regional Cooperation
E. Environmental Protection and Enhancement

2.1 Integrated Water Resources Planning and Management

This component is directed towards efficient water use and development, upgrading water quality and protection of the environment within an integrated approach to water resources planning and management. Selected activities or projects to be undertaken in this component include the following:

- Assessment and analysis of water resources availability and demands
- National water master plans
- Assessment of the impact of potential climate change
- Updating the water balance of Lake Victoria

2.2 Capacity Building

The objective of the Capacity Building Component is to strengthen the institutional and human resources capabilities at basin-wide and national levels.

One of the immediate activities in this component is to review and agree on the scope and organization structure of an executing agency (TECCONILE or its successor organization) and then strengthen that organization to assist in managing or implementing the Action Plan.

Additional projects include the following:

- Development of the Nile River Basin Atlas
- The improvement of water management methods and procedures
- Strengthening regional and national water resource and environmental agencies
- Establishment of a basin-wide data base information system
- Strengthening regional centres of expertise within the basin.

2.3 Training

Training will be directed towards improvement of individual and group skills in a particular field.

Short term objectives of the training component include: training of individuals in specific fields; training of group of professionals within the executing agency (TECCONILE) or in various basin countries' organizations; and training of professionals, technical managers, organization managers and decision makers.

Long term objectives will include; a basin-wide training needs assessment, a long term training program and design of a human resources development (HRD) program.

2.4 Regional Cooperation

The main objective of this component is to develop a framework acceptable to all countries for basin-wide cooperation. This will include the establishment of a basin-wide multidisciplinary framework for legal and institutional arrangements. A clear process will be laid out to determine equitable and legitimate right of water use in each riparian country. Efforts will also be directed towards establishment of policies and legislation for regulating water bodies that are shared by several countries.

This component also includes the process for the identification, selection, construction and operation of several regional water resource development projects to promote basin-

wide cooperation and to enhance the socio-economic well being of citizens within the basin.

2.5 Environmental Protection and Enhancement

This component is primarily directed towards the control of land use, soil degradation, siltation, pollution and water weeds in equatorial lakes and development of environmental protection policies for major lake sub-regions.

Other activities are directed towards the protection of rare animals and environmental management and development of major sub-basins.

3.0 DONOR SUPPORT

The Entebbe workshop agreed that a major effort has to be directed towards securing funding for implementation of the Action Plan. A process was suggested to approach donor agencies to request support.

4.0 CONCLUSIONS

The following conclusions summarize the content of the Action Plan and delineate actions that are suggested to attain successful implementation of the program.

1. The draft Action Plan includes 22 projects/programs with an estimated cost of about $100 million US. This indicates that the present draft is overly ambitious.

2. In order to implement, coordinate and manage the Action Plan, the following personnel requirements are estimated:

   - International Consultants (2,000 person months)
   - National Consultants (3,800 person months)
   - TECCONILE (600 person months)
   - National Governments (2,000 person months)

3. Conclusions 1 and 2 do not provide for actual construction and management of any water resources development projects. Project development will be carried out in follow-up phases.

4. A strong effort should be put forth by the riparian countries to develop a framework for international cooperation and for the equitable use and allocation of Nile waters.

5. The riparian countries must reach agreement on the scope and structure of TECCONILE, or its successor organization.

6. If TECCONILE is to coordinate and manage the Action Plan program as the agent for member countries, then that organization needs to be strengthened.

7. Substantial efforts need to be made to obtain funding for the Action Plan.

8. The Technical Committee should initiate a process that will begin to identify priority projects/programs. Suggested priorities are outlined in the report.

9. A process needs to be laid out to develop an orderly approach towards regional cooperation. Steps in the process have been defined in the report.

5.0 Further Action

This draft of the report has not been reviewed by the country participants that attended the Entebbe workshop. The participants will now review and revise the report to ensure that their concepts have been accurately reported. The review process will be finalized by the country participants at the workshop in Cairo from November 19 to 21, 1994. Following this, the Ministers will also be provided an opportunity to review the document prior to their meetiing at Arusha, Tanzania in February 1995.

LIST OF ACRONYMS & ABBREVIATIONS

HYDROMET	Hydrometeorological Survey of the Catchments of Lake Victoria, Kyoga and Mobuto Sese Seko
UNDP	United Nations Development Programme
WMO	World Meteorological Organization of the United Nations
TECCONILE	Technical Cooperation for the Promotion of the Development and Environmental Protection of the Nile Basin
NILE 2002	Conferences on "Comprehensive Water Resources Development of the Nile Basin" - Participation by Riparian Countries, ESA's and Worldwide Technical Experts
ESA's	External Support Agencies
CIDA	Canadian International Development Agency
TC	Technical Committee (of Hydromet or TECCONILE)
PFRA	Canada, Department of Agriculture, Prairie Farm Rehabilitation Association
FAO	Food and Agriculture Organization of the United Nations
WMO	World Meteorological Organization
WHO	World Health Organization
EEC	European Economic Commission
UNEP	United Nations Environment Programme
OMVS	Senegal River Basin Authority
GEF	Global Environmental Facility
UNCDF	United Nations Capital Development Fund
LDC	Lesser Developed Countries
IFAD	International Fund for Agriculture Development
NGO	Non-government Organization

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1.0 INTRODUCTION

1.1 BACKGROUND

International arrangements for management of the Nile River are of growing interest and concern. Many opportunities exist for effective cooperation among basin countries to their mutual benefit. At the same time, growing population pressures, limited water resources and water pollution pose the potential for significant difficulties within and among Nile basin countries.

These circumstances are generally well recognized by Nilotic countries, as well as the international community. With the assistance of international agencies, there is now an opportunity for basin countries to move forward with a much more comprehensive cooperative framework than has previously been achieved.

The Nile basin countries already have considerable experience in working together. An excellent example of prior cooperation involving several basin countries is the Hydromet Survey Project, which operated from 1967 to 1992, with international support from UNDP through WMO. Other examples exist, such as the bilateral utilization agreement between Egypt and Sudan, and recent bilateral arrangements for technical cooperation between Ethiopia and both Sudan and Egypt.

During the past two to three years, significant actions have been taken by the basin states with some international support, to advance the goals of mutually beneficial cooperation in a substantive and more comprehensive way.

Ministers responsible for water affairs in Nile basin countries met in Kampala in December, 1992 and agreed that future cooperation on water resource matters should be pursued, at least for a three year transitional period, under the "Technical Cooperation for the Promotion of the Development and Environmental Protection of the

Nile basin," or "TECCONILE." The Agreement to this effect, signed by ministers from six countries (Egypt, Sudan, Rwanda, Tanzania, Uganda and Zaire), has the following objectives:

- Long-term objectives:
  - To assist participating countries in the development, conservation and use of the Nile Basin water resources in an integrated and sustainable manner through basin-wide cooperation for the benefit of all.
  - To assist participating countries in the determination of the equitable entitlement of each riparian country to the use of Nile Waters.
- Short-term objectives (Transitional Period):
  - To assist participating member states in developing national water master plans and their integration into a Nile Basin Development Action Plan.
  - To assist participating member states in developing the infrastructure, capacity building and techniques required for the management of the Nile basin water resources.

TECCONILE Document TEC1/93 (Annex 1 - Ref.2, pages 42 to 48 inclusive) describes the organizational and institutional setup and suggests major activity areas for the three year transition period as follows:

A. Activities proposed for the short term objectives: To assist participating member states in developing national water master plans and their integration into a Nile Basin Development Action Plan.

A1. Assist participating countries to develop a methodology and tools for water master planning process and updating of plans needed as inputs to a basin-wide water management planning and environmental protection.

A2. Initiate the installation of a basin-wide information system.

A3. Prepare an overview of basin-wide institutional and legal arrangement to support the efforts of all basin states to harmonize their water planning management and environmental protection and to facilitate joint development projects.

A4. Assist in the early identification and preparation for financing of national and/or regional priority programs or projects of tangible benefit to every country in the basin.

A5. Support the installation of national capabilities for routine environmental impact assessment (EIA), economic cost benefit analysis, and updating of national and regional water resources master plans.

B. To assist participating member states in developing the infrastructure capacity building and techniques required for the management of the Nile basin resources

B1. Review of existing water quantity and quality data and regional database.

B2. Design and test a modern data collection, transmission and analysis system in order to develop basin-wide information systems.

B3. Establishment of GIS for storage, retrieval, organization and analysis of data.

B4. Preparation for the strengthening and installation of up-to-date monitoring and assessment capabilities.

B5. Modelling (updating and transferring to national the models developed during the Hydromet Project).

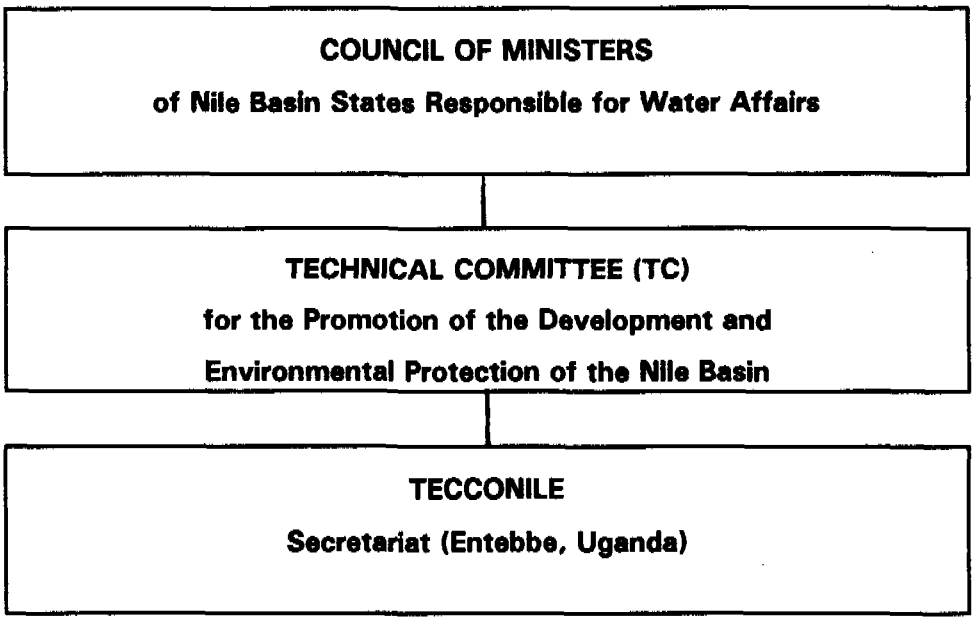
C. Cross cutting issues: TRAINING

TECCONILE came into being on January 1, 1993, as a result of a decision of the Ministers responsible for water affairs of the Nile Basin countries at their meeting on 7-8 December, 1992.

TECCONILE was created to replace the Hydromet Project which had operated continuously since 1967, as a mechanism for cooperation in the field of meteorological and hydrological data collection, analysis and dissemination. It was given a three-year transitional mandate during which the framework of a new cooperative structure is to be determined. The objectives of the decision can be interpreted as follows:

- to continue technical cooperation for the promotion of the development and environmental protection of the Nile Basin (TECCONILE);
- to establish a more permanent organization structure and agreement on the form of this cooperation within three years;
- to provide terms of reference to the Technical Committee of Hydromet to continue as the Technical committee for TECCONILE; and
- to include basin-wide water resources planning in their activities.

Now, the structure of TECCONILE is as follows:



The Council of Ministers has agreed to meet once a year and the Technical Committee three times. The Secretariat's agreed establishment is one Director, qualified and experienced in water resources, five professional staff, technical, administrative and support staff. All senior staff are seconded from national governments which are members of TECCONILE.

The Secretariat is located, in adequate but not spacious quarters, in Entebbe, Uganda.

As stated above, the Council of Ministers plans to meet once per year. As agreed at Kampala in December 1992 their second meeting took place in Cairo in January 1994. Their third meeting is scheduled for Arusha in February 1995. The Technical Committee (TC) of TECCONILE met in Entebbe in July 1993, in Cairo in January 1994, and in Entebbe on June 17-18, 1994.

A parallel activity of importance in basin-wide cooperation is the Nile 2002 Conferences. These are a series of annual conferences which bring together technical experts from each Nile basin country. The first of these took place in Aswan in February 1993 and

the second in Khartoum one year later (January 29 to February 1, 1994). Future conferences are scheduled for Arusha in February 1995, Uganda in 1996 and Kenya in 1997.

Both conferences to date included:

- keynote papers, usually by internationally recognized experts;
- country papers which outlined issues from the perspective of each country; and
- technical papers.

In addition, the Nile 2002 conferences permit valuable exchanges between country representatives and ESAs who are interested in providing financial and technical support for water management activities. The proceedings from these conferences (listed in Annex 1) provide useful information on the water management issues in the basin and on the various perspectives of the participants.

At the Nile 2002 conference in Khartoum, the Nile countries agreed on a statement which included a list of fourteen practical measures for supporting regional cooperation in water management (see Annex 2).

In response to a request by Nile basin country representatives during the Nile 2002 conference at Khartoum in February 1994, the Canadian International Development Agency (CIDA) agreed to provide support for four of the measures:

- preparation of an Action Plan;
- development of a Water Resources Atlas for the Nile basin;
- support for future Nile 2002 conferences; and
- assistance in the establishment of a non-governmental organization (International Nile Basin Association).

The "Action Plan" would be a practical plan of activities which would help meet the objectives encompassed in the December, 1992 TECCONILE Agreement.

1.2 APPROACH TO ACTION PLAN DEVELOPMENT

In 1993 the TECCONILE technical committee (TC) had instructed its Secretariat to put together a preliminary proposal for preparation of an Action Plan, which was sent to CIDA in October, 1993. The concept of this Action Plan was further discussed at the Khartoum Nile 2002 conference, where it was given the highest priority by basin countries on the list of future practical measures.

In March 1994, plans were initiated to arrange concurrent workshops on the first two CIDA-assisted measures (Action Plan and Atlas) in Entebbe from June 13-15, 1994, in conjunction with the regular meeting of the TC of TECCONILE. The intent was to have an Action Plan drafted on the basis of the Entebbe workshop, which would then be reviewed and finalized at the time of a second workshop tentatively scheduled for Cairo in November 1994.

Consultants, Al McPhail (W-E-R AGRA), Bert Lukey (Director of Engineering and Sustainability, PFRA, Agriculture Canada) and Ismail Najjar (President, Hydrosult Inc.) were retained by CIDA to assist the Nile countries in development of the Action Plan, including serving as facilitators for the workshop(s). Dr. Yahya Abdel Mageed, President of Y. Abdel Mageed and Partners, and a well known authority on the Nile basin, was also retained to act as an advisor and resource person to the other CIDA consultants.

In addition to the basic objective of assisting the Nile countries to develop a practical plan of activities, CIDA proposed that two secondary objectives be pursued in the assignment. The first was to use the opportunity to strengthen cooperative arrangements and procedures between key technical officials of Nile countries in order to facilitate the development and implementation of the Action Plan. The second was to improve collaboration among ESAs in their support to basin countries in water management matters.

In preparation for the Entebbe workshop, the proposed terms of reference for the consultants and the workshop were circulated to basin country representatives for advance comment, along with a listing of potential activities for consideration. The activities suggested in the CIDA document were based on three sources:

- activities suggested for the three year transition period at the December 1992 ministerial meeting in Kampala, as recorded in TECCONILE document TEC1/93;
- documentation and discussion from the Nile 2002 conferences in Aswan in February 1993 and in Khartoum in January 1994;
- practical measures for supporting regional cooperation as agreed by heads of delegations at the Khartoum conference on February 1, 1994. (Annex 2.)

Written comments on this material, along with an indication of priority activities and principal concerns, were received from many of the basin countries prior to the workshop. This provided valuable input in preparation for the Action Plan Workshop.

2.0 ENTEBBE WORKSHOP: JUNE 13 TO 15, 1994

2.1 PARTICIPANTS

The Nile basin countries represented at the Action Plan Workshop included Egypt, Ethiopia, Sudan, Tanzania, Uganda and Zaire. Countries that did not attend included Burundi, Eritrea, Kenya and Rwanda.

Each country that attended, with the exception of Ethiopia and Uganda, provided two participants. Ethiopia was represented by one participant. Since Uganda was the host country, their level of participation ranged from two to four members depending on availability and the topic being discussed. Three members from TECCONILE also attended the Action Plan Workshop including the present Director, the outgoing Director and the Water Resources Planner. A list of all the participants is presented in Annex 3.

In parallel with the Action Plan Workshop a second workshop took place on a water resources atlas for the Nile basin. Led by consultant Greg Gillis, Vice-President of Spider International, the Atlas Workshop provided intensive training on the preparation and use of a regional atlas. One workshop product was the proposed Atlas project (Annex 6 - Project B2).

The workshop participants were addressed by His Excellency, the Honourable Henry Muganwa Kajura, Uganda Minister of Natural Resources, at an official ceremony on June 15, 1994.

2.2 PROCESS

The written comments received from basin country representatives prior to the workshop identified nearly 60 activities that were considered to be of priority to one or more countries. These were organized by the consultants into 14 categories in advance of the workshop as a starting point for discussion of specific action items.

The process for the workshop was generally as outlined in Annex 4 and included the following steps:

1. an introductory plenary session including the participants and consultants involved in the ATLAS workshop (which proceeded in parallel);

2. a review of the Action Plan and workshop goals and processes, which included review and discussion of:

   - objectives of basin-wide cooperation
   - institutional arrangements
   - terms of reference
   - workshop goals and expected outputs

3. development of selection criteria, review and selection of activities, consolidation and categorization of activities, and an attempt to set priorities;

4. definition of project work packages, to the extent possible, from the selected activities;

5. concluding plenary session with the ATLAS workshop participants to review the

respective workshop results and expected interfaces.

2.3 WORKSHOP OUTPUTS - FRAMEWORK OF ACTION PLAN

As a result of the workshop deliberations, the following categories of activities were agreed upon by the participants.

1. INTEGRATED WATER RESOURCES PLANNING AND MANAGEMENT
2. CAPACITY BUILDING
3. TRAINING
4. REGIONAL COOPERATION
5. ENVIRONMENTAL PROTECTION AND ENHANCEMENT

A total of 34 projects were recommended for inclusion in the Action Plan within these categories. Annex 5 provides a brief summary of each of these projects, along with the criteria for selection.

Participants noted that the categories were not exclusive and that many activities could be classified in two or more of these categories; thus, some further consolidation or packaging of activities was expected after further work.

Aware of the need to achieve results as soon as possible, but also aware of financial and organizational constraints, participants agreed that activities in the Action Plan should be considered for implementation in three time frames:

- Immediate: begun and/or completed in 1994
- Near Term: begun before the end of 1995
- Medium Term: begun in 1996 or later if phasing dictates

Four of the recommended projects fell in the Immediate action category.

Some activities are already underway or in an advanced state of planning, with support provided or indicated from ESAs including CIDA, FAO and UNEP. The workshop

recommended that TECCONILE implement two newly identified projects in the immediate future:

- development of a roster of institutions (including consultants) with expertise in water resources management in the Nile basin (regional expertise which could be available to help implement or support action plan projects);
- compilation of an inventory of existing and proposed regional cooperation activities in the Nile basin.

On the basis of the workshop discussions and outputs, the consultants were instructed to prepare a draft comprehensive Action Plan report which would include, inter alia, profiles of all proposed projects according to a standard format. These profiles would include expected objectives, outputs, activities, necessary inputs, schedule, implementation arrangements and a budget indicating cost estimates and expected sources of funds.

2.4 DONORS CONSULTATION MEETING

A meeting with representatives of a number of international donor agencies was held on June 16, 1994 from 10:00 a.m. to noon, following completion of the workshop sessions. The purpose was to apprise such agencies of the progress in developing an Action Plan and of its content, and to explore potential opportunities for funding.

Representatives of CIDA, FAO, UNDP and UNESCO attended, along with senior representatives of the six attending basin countries, the TECCONILE secretariat and the CIDA consultants. Mr. Patrick Kahangire of Uganda chaired the meeting.

The CIDA representative (Mr. Brian Grover) affirmed CIDA's commitment to continuing assistance with development of the Action Plan and Atlas, as well as sponsorship of future Nile 2002 conferences and assistance in development of a new NGO. He also left open the possibility of CIDA participation in other projects arising from the final Action Plan.

The FAO representative, Mr. Wolf Klohn, spoke particularly about a current Italian-sponsored project through FAO which has $5 million available for a 3 year period, covering a number of areas which closely parallel those emerging in the Action Plan. The general objectives would be to strengthen regional cooperation, the capacity to negotiate equitable distribution of water use, and the achievement of environmental protection in the basin. Some possible specific areas that could be covered would include clarification of complementary interests; development of information systems to assist in policy development; basin monitoring, planning and management; support of integrated management at regional and national levels; data exchange and integration of data; cooperative management of sub-basins; development of legal and institutional frameworks; and training. There is apparent potential for funding of portions of the Action Plan. FAO wishes to have clear agreement of all affected basin countries before proceeding with elements of the project, and is looking for an appropriate mechanism to achieve this. TECCONILE could be that forum if all countries were members, or were to appropriately designate TECCONILE as their chosen vehicle. There was some discussion around this matter.

The UNESCO representative, Ms A. Nakazzi, indicated that her organization is not presently a major donor but is stressing technical assistance with a focus on human resource development, capacity building, institution building and assessment of sustainable development approaches. UNESCO is moving away from national programs in favour of regional programs. They are willing to follow up on earlier participation in the Hydromet training programs by participating in appropriate projects arising from the TECCONILE Action Plan.

Mr. Matlotleng Lebogang Motlana of UNDP spoke briefly regarding their programs. They wish to strongly emphasize the need to avoid competition among donors. He noted that the Global Environment Fund ($2 - $3 b) has not yet had many projects approved. It can include technical assistance for capacity building that meets the objectives of Capacity 21 of the program.

3.0 THE ACTION PLAN FOR NILE RIVER BASIN

3.1 OVERVIEW OF THE NILE RIVER BASIN

The Nile River Basin extends over 3,030,000 km^2 and encompasses territory of ten countries with a population of 263 million inhabitants. It is estimated that over half of this population live in the Nile Basin. Basic indicators[1] show that the riparian countries of the Nile River Basin are amongst the poorest in the world with an average 1994 GNP per capita ranging from $US 110 to $US 640 and averaging $US 282. Moreover, these basic indicators show little to no progress over the past decade.

The Nile River Basin is one of the largest in the world but its annual flow, because of limited average precipitation over the catchment and the fact that about two thirds of the Basin lies in the semi-arid and arid zones, is severely limited in the downstream part of the basin. The demand for water resources in the Nile River basin is increasing for all uses especially for irrigation. Water resource deficits could occur within the next two decades. Growing populations and recurring famines illustrate the urgency to conserve and develop the water resources of the Nile basin. Efficient water use and development, the upgrading and maintenance of water quality and protection of the environment are the immediate areas of concern related to water management within the ten riparian Nile countries. The water requirements of the Nile countries and the urgency to meet national requirements vary according to their respective geographical features and prevailing socio-economic conditions.

The benefits expected by each Nile country from joint water resources management differ; however, socio-economic development should be extended to all countries under a sustainable development program. Regional cooperation that needs to be achieved amongst the Nile countries can be summed up as the comprehensive and environmentally sound development of the water resources of the Nile River Basin and

[1]The World Bank - "World Development Report" 1994

its joint management to meet the water resources requirements of all the Nile countries on an equitable basis without generating any adverse effect on any country. In order to achieve this consensus, water resources planning and management must be integrated amongst the ten Nilotic countries.

One specific feature of the Nile hydro-climatology is the substantial loss of water resources through evaporation in the marshes and swamps, particularly in southern Sudan. These annual losses are estimated to be in the order of 25% of the average annual flow entering Lake Nasser.

The riparian countries of the Nile basin, like other countries of the world, face a number of environmental issues resulting directly or indirectly from human activities prompted, in particular, by demographic growth and the search for better socio-economic living conditions. These issues range from desertification and search for new land at the cost of deforestation and its consequences, to the use of a wide variety of chemical products for agriculture, domestic purposes or for manufacturing industrial products, whose residues can have a devastating effect on the human habitat, as well as on the quality of water resources.

Irrespective of any development of the water resources of the Nile, unless these issues are remedied, they will worsen with time. At the same time, unless additional water resources are mobilized and the water use efficiency is maintained at a high level, socio-economic development of most of the countries of the Nile basin will be seriously constrained. Appropriate management of the Nile River basin water resources is therefore necessary to sustain and enhance the well being of the citizens in the basin. Regional cooperation amongst all of the Nile countries is required to attain effective management.

3.2 FRAMEWORK FOR SUSTAINABLE COOPERATION

The management of international rivers often requires a complex framework that defines relationships among riparian states in order to allow consultations, negotiations and

cooperation, as well as management of conflicts and resolution of disputes.

Governments from each country will likely wish to direct, monitor and redirect actions designed to address agreed objectives. The roadmap to success will, therefore, likely involve periodic review and redirection of activities by Ministers with advice from their senior technical staff.

Member countries recognize the need for an Action Plan. Proposals for proceeding with the Action Plan should be placed in front of ministers for their review at the first opportunity. Thereafter, the process of planning the Action Plan in detail (and subsequently implementing it) should be systematically subjected to ministerial review and approval. An intergovernmental task force could be appointed by the Nile country governments to initiate, implement and manage the development of a framework for sustainable cooperation.

In order to fully realize and develop regional cooperation , the Action Plan will have to include a framework for regional cooperation with clear objectives and activities that will lead, in the long term, to determination of equitable and legitimate rights of water users in each riparian country. TECCONILE, with its Council of Ministers and a Senior Technical Committee, is a good start towards a cooperative framework. It was agreed at Entebbe (June 1994) that TECCONILE needs to be further strengthened and broadened in scope.

To ensure sustainable cooperation, a cooperative framework has to be developed that is acceptable to all basin countries. A review and strengthening of TECCONILE or agreement on a similar organization with a broader scope is a necessary early priority in the Action Plan. Basin-wide cooperation can be achieved if water resources developments are agreed to and provide benefits to several countries within the basin. It is advisable, in the long term, to have an international agreement on water management. An agreement would ensure all countries that development of waters in any particular country would not result in a conflict over water management with other Nile Basin countries.

Sustainable cooperative activities in the Nile Basin can best be fostered and maintained when all the riparian states have reached comparable levels of technical and institutional capacity. This requires that the countries' capacities in planning and data availability be augmented; strengthening the capacity of the riparian states in this regard is thus essential. Activities directed at capacity building are included in the Action Plan.

Finally, attention must be focused on development of projects that will enhance the economic and social welfare of the citizens within the basin. Priority projects should be cooperative, joint efforts involving other Nile basin countries.

In some specific cases, it may not be necessary for all ten Nilotic countries to reach agreement on projects within a sub-basin. In such cases, a sub-basin agreement may be appropriate with only those countries affected, including relevant downstream countries.

The Action Plan considers the foregoing points and is directed towards attaining a cooperative framework to promote basin-wide cooperation on integrated water management and environmental protection and enhancement. The framework must succeed in obtaining investment in order to increase food availability, enhanced water supplies, water quality improvement and development of potential energy resources.

3.3 COMPONENTS OF THE ACTION PLAN

The Action Plan as defined during the Entebbe workshop contains five components that respond to the short and long term objectives set by the Ministers and the responses to the CIDA Terms of Reference by the representatives of the member and observer states. The five components are:

A. Integrated Water Resources Planning and Management
B. Capacity Building
C. Training
D. Regional Cooperation
E. Environmental Protection and Enhancement

The Action Plan is based on the integrated development of the Nile basin water resources and their environmental protection in an institutional, economical and technical sustainable fashion. The five activity areas include interdependent and complementary elements that bind the activities of the Action Plan and ensure the effectiveness and sustainability of their outputs, and at the same time build the capacity of the Nile countries in the main themes, such as water resources management, environmental protection and regional cooperation.

The Action Plan assumes that TECCONILE and/or a similiar sucessor organization will act as the agent responsible for managing and coordinating all activities of the Action Plan. This assumption is based on the following:

1. Member countries and observers will agree on strengthening and increasing the scope of TECCONILE.

2. Countries that are not members of TECCONILE will join or will be active and cooperative.

3. Immediate efforts will be made to provide TECCONILE with support and enhance its capacity to implement this mandate in an effective and efficient manner. These immediate actions include:

   - upgrade TECCONILE office facilities;
   - upgrade and increase TECCONILE staff;
   - review, upgrade, update and transfer existing Hydromet models and develop new models as required;
   - water resources atlas of the Nile basin;
   - inventory of existing and proposed regional cooperation and activities; and
   - roster of expertise in water resources management in the Nile River basin countries.

One of the programs within the Action Plan is to upgrade the basin's data bases for rational water resources management of the Nile basin. This could create the foundation, heading eventually to an equitable and reasonable utilization of the Nile waters for the benefit of its inhabitants, within an environmentally sustainable socio-economic framework. Nile basin riparian countries should endeavour to adopt and observe standards and procedures which will open lines of communication that would

ultimately lead to the attainment of the objective of an integrated system of international river basin development, planning and management.

It is expected that the cooperation among the ten Nile basin countries, will be enhanced through the establishment of the basin-wide information system; the standardization of data management, and the exchange of plans and projections of water utilization through the standardized preparation of master plans. These activities should pave the way to more cooperative undertakings such as joint planning of projects of common interest. In the longer term it may be possible to achieve agreements in one or more of the fields of equitable apportionment of consumptive and non consumptive use, stream pollution, procedures for disputes settlement and then, hopefully, agreements for joint investments and development, and administration of facilities of common benefit.

The criteria established by the member country participants in the Entebbe workshop, for the purpose of selecting and phasing the activities contained in the Action Plan are outlined in Annex 5. These criteria should be regularly reviewed and updated as circumstances dictate. A summary of the criteria is outlined below.

- Progress on objectives will show visible results within two years
- Tangible benefits for all basin countries
- Careful consideration to enhance external donor support factors
- Activities that can be carried out by member countries and national consultants
- Consider projects where considerable preparatory work has been completed
- Consider capacity, or the opportunities for enhancing the capacity, of basin cooperative institutions to realistically carry out the work
- Relevance to Ministers' agreement at Kampala in December 1992 and in Cairo in December 1993

Programs and projects included within each of the five components are outlined in much more detail in Annex 6 entitled "Project Profiles of Action Plan." Annex 6 provides the

background and justification, objectives, outputs, activities, inputs, management and coordination responsibilities, required equipment and material, institutional arrangements, implementation strategy, person power, and budgets required for each of the projects outlined below:

A. INTEGRATED WATER RESOURCES PLANNING AND MANAGEMENT

A1. Assessment and Analysis of Water Resources Availability and Demand for Water Resources Uses

A2. Review/Development of National Water Master Plans

A3. Assess the Impact of Potential Climate Change on Water Resources Availability (Prolonged Droughts) and Water Quality in the Basin and Investigate Mitigation Measures

A4. Update the Water Balance of Lake Victoria

B. CAPACITY BUILDING

B1. Institutional Strengthening and Technical Support to TECCONILE and Nile Basin Riparian Countries

B2. Atlas of the Nile River Basin

B3. Improved Water Management Methodologies and Procedures

B4. Capacity Building in Integrated Water Resources Management

B5. Review, Strengthen and Develop National and Regional Institutional Arrangements for Environmental Protection and Enhancement

B6. Basin-wide Information Systems

B7. Identification and Strengthening of Existing Regional Centres of Expertise Within the Basin

C. TRAINING

C1. Comprehensive Needs Assessment, Long-term Training and Human Resources Development Program

D. REGIONAL COOPERATION

D1. Inventory of Existing and Proposed Regional Cooperation Agencies and Activities

D2. Roster of Expertise in Water Resources Management in the Nile River Basin Countries

D3. Nile Basin Cooperative Framework

D4. Public Awareness and Participation

D5. Identification of National and Regional Projects to Promote Basin-wide Cooperation Among the Nile Countries

E. ENVIRONMENTAL PROTECTION AND ENHANCEMENT

E1. Water and Land Environmental Protection and Enhancement

E2. Protection of Rare Animal Parks' Vegetation

E3. Diagnostic Studies (UNEP)

E4. Harmonization of Policy in Lake Victoria Sub-Region

E5. Environmental Management and Development of Sub-basins in the Nile River Basin

Table 1 summarizes the number of projects in each component and outlines the time frame in which each of those will be carried out.

It should be noted that 34 projects were identified during the Entebbe workshop in June 1994. Further consultations and considerations leading to the preparation of this report have consolidated or re-categorized the 34 projects into the 22 projects as listed in Table 1. The essence of each of the original 34 projects was preserved in this process. Annex 7 provides a summary of how the 34 projects were reduced to 22 without losing any of the original content.

TABLE 1
Summary of Projects
Action Plan Workshop - June 13 to 15, 1994

Component		Time Frame			Total
		Immediate	Near Term	Medium Term	
A	Integrated Water Resources Planning and Management	--	1	3	4
B	Capacity Building	1	6	--	7
C	Training	--	--	1	1
D	Regional Cooperation	2	2	1	5
E	Environmental Protection and Enhancement	--	4	1	5
	Total	3	13	6	22

Definitions:
Immediate Action - Begun and/or completed in 1994
Near Term Action - Begun before the end of 1995
Medium Term Action - Begun in 1996 or later where phasing so dictates

3.3.1 Integrated Water Resources Planning and Management

The integrated Water Resources Planning and Management Component is directed towards efficient water use and development and the upgrading and maintenance of water quality and the protection of the environment within an integrated approach to water resources planning and management. The activities proposed in this component aim at establishing the basic conditions for a rational water resources management system which will lead to a basin-wide integrated approach to water resources planning and management. The activities prescribed within this component aim at bringing the database of Nile basin countries to comparable levels of completeness and reliability in order to facilitate regional activities through basin cooperation.

The selected activities or projects are summarized below and are scheduled, as illustrated, for near term action and medium term action.

Near Term Action

The project entitled "Assessment and analysis of water resources availability and demands", is one of the principal activities in the Action Plan, upon which other activities within this component and the regional cooperation component rely. This activity will be supported by two other activities, proposed within the capacity building component, namely:

(i) the improvement of water management procedures; and

(ii) the initiation of a basin-wide information system.

Mid Term Action

The mid term activities formulated under this component constitute a normal continuity to the near term action activities. These are:

(i) review and development of national water master plans;

(ii) assessment of the impact of potential climate change on water resources availability and water quality in the Nile basin; and

(iii) updating the water balance of Lake Victoria.

3.3.2 Capacity Building

The objective of the Capacity Building Component is to build up the institutional and human resources capacity at basin-wide and national levels. This component is quite pivotal for all development activities prescribed within the Action Plan.

Given the vital role of this component, its activities are scheduled for implementation

as immediate, and near term actions.

Immediate Action

(i) An immediate action is planned to strengthen TECCONILE's planning, management and coordination abilities. This is an important activity, since TECCONILE or a similar organization is envisaged to play an important role in managing and coordinating the implementation of the Action Plan.

Moreover, the capacity building of TECCONILE, will extend beyond the transitional period and will cover member states besides TECCONILE, through a network of liaison offices in each country. This will definitely enhance the capabilities of the Secretariat and will ensure proper coordination among the member states.

Near Term Action

(ii) Integrated water resources management. Capacity building of this theme will constitute the following:

(a) strengthening the regional and national water resources and environmental agencies to improve hydrometric, monitoring, forecasting and assessment capabilities;

(b) strengthening the capabilities in national and regional data management, including integration of resource data with socio-economic and environmental data;

(c) strengthening national hydrometeorological and hydrological networks for all parts of the basin including water resources monitoring, sediment and water quality processes and measurement procedures and analysis, as well as national and regional data banks and communication systems;

(d) review and strengthening of water quality/quantity data bases.

(iii) Improvement of water management procedures, which entails among other things, the standardization of approaches and methodologies for water resources assessment and management, and initiating a basin wide information system. Both these activities are aimed at building the capacity of the institutions, and the human resources of the Nile basin, and their successful implementation will undoubtedly enhance the possibilities of sustainability of water resources planning and management.

(iv) Capacity building of regional centres of expertise. The objectives of this

activity is to identify existing regional centres of expertise within the basin, and to select and strengthen the appropriate ones, to serve as a springboard to further overall enhancement of regional capabilities. The goal here is to build and sustain regional capabilities that will be able to address various aspects and issues related to the development of the Nile basin resources.

Capacity building aims at strengthening the institutions at all levels in order, to deal more effectively and efficiently with all aspects of sustainable integrated water resources development.

3.3.3 Training

The Training Component of the Action Plan is designed to complement relevant activities of all elements in the Action Plan. The Training Component aims at specific problems in an attempt to directly offer applicable skills.

Under the Training Component, various levels and forms of training will be undertaken, such as short-term training of individuals in specific fields; training for homogeneous groups coming from one level of professionals in various basin countries' organizations; integrated and complementary training for more than one level of professionals such as technical managers, managers and decision-makers coming from similar organizations of the Nile basin countries; comprehensive organizational development involving task oriented training. It is envisaged that each thematic component of the Action Plan will include training elements designed to improve skills in that particular theme.

Nevertheless, the Training Component within the Action Plan will have another objective, viz the preparation of comprehensive assessments or actions, for a basin-wide training needs assessment, long term training component and a design of human resources development (HRD) programme.

3.3.4 Regional Cooperation

The Action Plan calls for regional cooperation activities that will be implemented in the immediate term, the near term and the medium term. The immediate term objectives

are to develop an information base on all water based activities in the Nile Basin in which more than one country is participating; and, to build up a roster of available experts and institutions specialized in disciplines related to integrated river basin development. The main objectives of the near term activities are: to develop a framework acceptable to all countries for basin-wide cooperation; and to raise public awareness and promote public participation concerning water resources management within the Nile River Basin. In the medium term, efforts will be directed towards the identification of projects which will enhance the economic and social welfare of citizens in the basin.

In order to develop an acceptable framework for cooperation, in the near term, a task force from the Nile countries could be appointed by their governments to set out the steps of this process in more detail and to act as the project implementing body.

In the medium term, it is expected that a number of substantive, practical projects of both a national and interstate nature can be identified and implemented which will clearly demonstrate the benefits of multi-state basin cooperation. These could include projects dealing with hazard mitigation (floods, drought etc.), multi-purpose water resources development, evaporation reduction, water conservation and use efficiency, hydropower and regional energy grids, and watershed management. All such projects should be of benefit to two or more basin states and, in aggregate, they must be of benefit to all Nilotic countries. Ideally, some individual projects will benefit all states directly or indirectly. While the identification and implementation of such projects will eventually fit within an overall basin cooperative framework (as per the above), it will be important to go ahead with those projects which can proceed in parallel with that process in order to achieve early results and demonstrate cooperative benefits.

The inventory of existing and proposed activities that is currently underway through TECCONILE, as described above (Project D1 in the Appendix), should provide a good starting point for the identification of such longer term, regional projects. A follow-up process is required which will lead to the definition and implementation of a core package of initiatives within a reasonable timeframe. This could begin almost

immediately. Possible steps would include:

1. carry out an analysis of potential cooperative activities including those identified in Project D1;

2. propose a package of activities which will meet the above criteria regarding benefits to basin states and which appear achievable in terms of existing and possible institutional arrangements and would have good potential for resourcing from basin states and/or ESAs;

3. propose possible/alternative institutional and funding arrangements to achieve implementation of the proposed package;

4. submit the proposal to ministers for consideration; and

5. upon approval, proceed with the pursuit/implementation of selected projects, including formal approaches to ESAs where appropriate.

The process of defining and implementing priority regional projects could be coordinated by TECCONILE under the guidance of a task force representing as many basin states as possible, preferrably appointed by ministers. Implementation responsibilities will vary according to the nature of the activity. Steps 1, 2 and 3, at least, would require a cadre of international and national consultants to carry out much of the work.

3.3.5 Environmental Protection and Enhancement

The Environmental Component includes four projects planned for near term implementation. The four projects are primarily directed towards control of land use degradation, siltation, pollution, and water weeds in the equatorial lakes and development of environmental protection policies for major lake sub-regions.

The Entebbe workshop participants identified nine activities to be implemented as medium term actions within the Environmental Component. During the course of the finalization of the Action Plan, it was judged more effective to group eight of these activities under one project for the entire Nile basin, to be executed on a sub-basin basis. The sub-basin studies will focus on:

- defining sources of pollution;
- outlining the consequences of pollution;
- developing policies and regulations for pollution control; and
- outlining action plans for an integrated watershed management in accordance with environmental policies, regulations and legislation.

3.4 IMPLEMENTATION STRATEGY AND APPROACH

Table 1 illustrated that 22 projects are included in the Action Plan and further indicated the recommended time frame for implementation of each project. Personnel requirements (and duration) for each of the 22 projects recommended for the Action Plan are shown in Table 2. Provisional cost estimates are shown in Table 3. These preliminary cost estimates are based on the assessment of the individual projects described in Annex 6.

The timeframe for carrying out the Action Plan will depend on many factors, including inputs by Nilotic countries; the ability of TECCONILE to manage and coordinate; availability of funding; and the actual mobilization of external assistance. Obviously, the entire Action Plan cannot be implemented in the near future.

One subject that needs immediate consideration, discussion and agreement is the organization structure and future role of TECCONILE. TECCONILE was established on January 1, 1993 as an interim measure to cover a three-year transitional period between the termination of the Hydromet Project and the beginning of a new basin-wide organization with expanded terms of reference. Just over one year remains of TECCONILE's mandate. An early decision has to be made by the basin governments whether to extend TECCONILE's life under its existing terms of reference, amend its terms of reference or establish a new organization.

Certainly, the Action Plan will require coordination and a degree of project direction and management by a strong basin-wide organization. At this point, it is assumed that

TECCONILE will coordinate the Action Plan activities and manage at least some of the projects on behalf of the Member States, and that the national governments will strengthen TECCONILE, and provide inputs and direction as required.

TABLE 2
Human Resources Required to Implement Action Plan

Project No.	Project Title	Person Months					Proj Time (mts)
		Intn'l. Consult's	Natn'l. Consult's	TECCONILE	Natn'l Govt's	Total	
A.	**INTEGRATED WATER RESOURCES**						
A1	Assess Supply and Demand	210	840	100	200	1350	48
A2	Water Master Plans	84	300	40	800	1224	36
A3	Assess Climate Change	12	--	2	--	14	12
A4	Update W.B. Lake Victoria	12[1]	--	2	--	14	12
B.	**CAPACITY BUILDING**						
B1	Instit. Strengthening - TECCONILE	180	380	--	14	574	60
B2	Atlas - Nile River Basin	52	75	121	78	326	60
B3	W.M. Method and Procedures	18[1]	40[1]	5[1]	10[1]	73	6
B4	Cap. Bldg. Int. W.R.M	20[1]	40[1]	6[1]	20[1]	86	12
B5	Strengthen Reg. Env. Instit.	24	180	20	240	464	18
B6	Basin Information System	120	650	90	180	1040	60
B7	Strengthen Regional Centres	15[1]	19[1]	3[1]	6[1]	43	6
C.	**TRAINING**						
C1	Training and Human Resources Dev.	112	202	60	102	476	60
D.	**REGIONAL COOPERATION**						
D1	Inv. Regional Activities	--	--	1	--	1	1
D2	Roster of Expertise	--	--	1	--	1	1
D3	Nile Basin Co-op. Framework	80	36	36	36	188	36
D4	Public Awareness, Participation	62	36	37		135	60
D5	Identification of Projects	138	276	10	30	454	24
E.	**ENVIRONMENTAL PROTECTION AND ENHANCEMENT**						
E1	Water, Land Env. Protection	210	100	24	24	358	54
E2	Protect Rare Animals	7	6	1	4	10	7
E3	Diagnostic Studies	N/A	N/A	N/A	N/A	N/A	N/A
E4	Harmonize Lake Victoria Policy	25	20	20	20	85	36
E5	Env. Mgmt., Dev. Sub-basins	650	600	15	200	1465	36
Total		2,031	3,800	594	1964	8389	

[1]Personnel requirements only shown for Phase 1. Phase 2 and 3 will require additional personnel requirements.

The estimates in Table 2 indicate that TECCONILE will have to provide nearly 600 person months over the next five years. So initially, emphasis has to be placed on properly upgrading and strengthening TECCONILE in a manner that is acceptable to all countries.

The national governments will be called upon to input nearly 2,000 person months with an additional requirement of nearly 4,000 person months from national consultants Adding the estimated requirement of over 2,000 person months for international consultants raises questions related to the availability of trained staff and funding. Emphasis will have to be directed towards rethinking the scale of the Action Plan and then to obtain sufficient funds to carry out the program. Consideration must also be given for the requirement to train staff and upgrade institutions to provide the necessary input and management aspects that are called for from the national governments.

When considering funding, it has to be remembered that the purpose of this Action Plan is to bring to fruition water resources development projects that will enhance the economic and social welfare of citizens in the basin. Costs of construction and management of those developments will be dramatically more than the budget estimated for the Action Plan program. As a result, a strong emphasis needs to be placed on obtaining funding for project planning and project implementation. How can donors be attracted to providing funding for the Action Plan as well as development of future water resources projects? One primary necessity to achieve donor interest is for the Nilotic countries to show a united and cooperative front in support of this Action Plan.

Priorities for development must be considered as it will be virtually impossible to implement all of the projects in the Action Plan within the next five years. An early priority list could include the following:

- agreement on the scope and strengthening of TECCONILE, including training;
- upgrading and strengthening water resources and environmental databases in each country;

TABLE 3
Action Plan
Project Components - Cost Estimates

Project No.	Project Title	Cost Estimates - Million U.S. $						
		Total Budget	Intn'l Consultants	Natn'l Consultants	TECCONILE	Govt's	Equip.	Contingencies
A.	**INTEGRATED WATER RESOURCES**							
A1	Assess Supply and Demand	12.50	4.20	4.20	0.50	1.00	1.00	1.65
A2	Water Master Plans	9.00	1.68	1.50	0.20	4.00	0.50	1.18
A3	Assess Climate Change	0.24	0.24	N/A	N/A	N/A	N/A	N/A
A4	Update W.B. Lake Victoria	0.24[1]	0.24[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]
	Sub-Total	21.98	6.36	5.70	0.70	5.00	1.50	2.83
B.	**CAPACITY BUILDING**							
B1	Instit. Strengthening - TECCONILE	8.00	3.60	1.90	N/A	0.07	1.35	1.04
B2	Atlas - Nile River Basin	4.57	0.91	0.38	0.60	0.38	1.74	0.58
B3	W.M. Method and Procedures	0.85[1]	0.36[1]	0.20[1]	0.02[1]	0.05[1]	0.10[1]	0.11[1]
B4	Cap. Bldg. Int. W.R.M	0.85[1]	0.40[1]	0.20[1]	0.03[1]	0.10[1]	N/A[1]	0.11[1]
B5	Strengthen Reg. Env. Instit.	6.50	0.48	0.90	0.10	1.20	3.00	0.85
B6	Basin Information System	13.80	2.40	3.27	0.45	0.90	5.00	1.80
B7	Strengthen Regional Centres	0.50	0.30	0.10	0.02	0.03	N/A	0.07
	Sub-Total	35.07	8.45	6.95	1.22	2.73	11.19	4.56
C.	**TRAINING**							
C1	Training and Human Resources Development	4.30	2.24	1.00	0.31	0.51	0.20	0.04
D.	**REGIONAL COOPERATION**							
D1	Inventory - Regional Activities	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D2	Roster of Expertise	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D3	Nile Basin Co-op. Framework	2.50	1.59	0.18	0.18	0.18	0.10	0.33
D4	Public Awareness, Participation	2.70	1.24	0.18	0.18	N/A	0.75	0.36
D5	Identification of Projects	5.50	2.76	1.38	0.05	0.15	0.45	0.72
	Sub-Total	10.70	5.59	1.74	0.41	0.33	1.30	1.41

- training of national government staff to work with TECCONILE;

- investigation, agreement, development, construction implementation, and management of two or more joint projects that would benefit the economic and social welfare of citizens in more than one country; and

- begin the framework for regional cooperation in water management.

Some examples of cooperative projects benefiting several countries which might be selected for early implementation include:

- Lake Victoria watershed management;
- Hydropower and erosion control projects; and
- Flood control and water supply storage projects.

This early priority list would provide a strengthened and appropriate coordination and management body (TECCONILE); consistent databases that are fundamental to wise decision-making for water resources management; trained personnel to assume the responsibility for national government input; and some tangible economic and social benefits to the people in the basin. As further funds and staff become available, TECCONILE or its successor can adequately administer additional programs; good quality databases will be available and trained personnel will be able to manage the program. In the meantime, citizens will receive economic and social benefits within their respective countries.

Since the Action Plan aims at a complex development of the Nile Basin, including a number of activities, some of them well defined, but some others dependent on initial results and future opportunities, it may be advisable from the outset to establish a mechanism for evaluation of progress and reporting to the governments and the community of ESAs. One possibility would be to utilize a qualified management consulting firm. The firm could be closely associated with TECCONILE and may also offer technical advice for coherent management and monitoring of the complex activities involved in carrying out the Action Plan. Without proper management and monitoring, these activities may overlap, conflict or leave gaps. Moreover, a large part of the activities envisaged are inter-dependent and require continuous coordination and management.

3.5 PROJECT COMPONENT PACKAGES AND THEIR COST

Table 3 summarizes the cost estimates for the Action Plan. The elements of the cost estimates include international and national consultants, TECCONILE management and coordination, government input, and equipment and materials. It should be indicated that the estimates proposed herein are preliminary and that during final preparation of projects, these may differ. The estimated total cost of the Action Plan is in the order of U.S. $100 million, including TECCONILE and government shares. It should also be emphazied that these cost estimates are for planning and capacity building activities and do not include costs for the actual construction of water resources development projects.

3.6 PROPOSED DEVELOPMENT OF PRIORITY PROJECTS

A potential list of priority projects was outlined in Section 3.4. In summary the priority projects include the following:

1. Reach agreement on the nature and scope of the implementing agency for the Action Plan (possibly TECCONILE).
2. Strengthen TECCONILE facilities and organization.
3. Initiate training programs at national and regional levels.
4. Upgrade and develop uniform water resource and environmental databases.
5. Define, select, plan, construct and operate selected water resource projects to provide socio-economic benefits for inhabitants in the basin.
6. Review and develop National Water Master Plans.
7. Commence the development of a framework for regional cooperation amongst Nile basin countries.

TABLE 3
Action Plan
Project Components - Cost Estimates

Project No.	Project Title	Cost Estimates - Million U.S. $						
		Total Budget	Intn'l Consult-tants	Natn'l Consult-tants	TECCONILE	Govt's	Equip.	Contin-gencies
E.	**ENVIRONMENTAL PROTECTION AND ENHANCEMENT**							
E1	Water, Land Env. Protection	5.70	4.20	0.50	0.12	0.12	N/A	0.74
E2	Protect Rare Animals	0.22	0.14	0.03	0.01	0.02	N/A	0.03
E3	Diagnostic Studies	N/A	N/A	N/A	N/A	N/A	N/A	N/A
E4	Harmonize Lake Victoria Policy	1.30	0.50	0.10	0.10	0.10	0.30	0.17
E5	Env. Mgmt., Dev. Sub-basins	21.00	12.00	3.00	0.08	1.00	2.00	2.71
	Sub-Total	28.22	16.84	3.63	0.31	1.24	2.30	3.65
Total		100.27	39.48	19.02	2.95	9.81	16.49	12.49

[1]Costs only provided for Phase 1. Phases 2 and 3 will require additional costs.

TABLE 4
Summary of Projects and Cost Estimates

Component		Timeframe[1]				Cost[2] Million $ U.S.
		Immediate	Near Term	Medium Term	Total	
A	Integrated Water Resources Planning and Management	–	1	3	4	$21.98
B	Capacity Building	1	6	–	7	$35.07
C	Training	–	–	1	1	$4.30
D	Regional Cooperation	2	2	1	5	$10.70
E	Environmental Protection and Enhancement	–	4	1	5	$28.22
	Total	3	13	6	22	$100.27[3]

[1]Definitions: Immediate Action - Begun and/or completed in 1994
Near Term Action - Begun before the end of 1995
Medium Term Action - Begun in 1996 or later where phasing so dictates
[2]See Table 4 for breakdown of costs (Details in Annex 6)
[3]Additional costs will be required since some of the projects were only budgeted for Phase 1 where additional phases are required. These costs do not allow for implementation (construction) of any major projects. Construction and implementation projects will be identified as this program progresses.

Agreement on the scope and mandate of TECCONILE could be initiated through Project B1. One of the outputs of the early phase of Project B1 is to clearly define the roles and responsibilities of TECCONILE and member countries. Completion of the scope definition should also occur within the next 12 months, according to TECCONILE's existing mandate.

Strengthening of TECCONILE will occur through Projects B1, D1 and D2. Project B1 extends over 60 months with the first six months intended to provide TECCONILE staff with office facilities and equipment, advisory services and personnel and institutional training. This intends to be the establishment of a functional unit. The remaining portion of the five year period will provide TECCONILE or its successor with institutional

support which includes staff hiring, personal training, and capacity building in terms of management and coordination capabilities for water resources and environmental programs. Projects D1 and D2 have already been initiated by TECCONILE. These two projects include development of an information base on water based activities in the Nile Basin which involve more than one country and a roster of expertise in water resources management within the Nile countries. Projects D1 and D2 are scheduled for completion within 1994. Personnel training for TECCONILE and National Government staff is scheduled to start as soon as funding is available and continue as needed over a five year period. Training will be through project C1 and integrated within all other projects as they are initiated.

Development of uniform data bases will be carried out through projects A2, B2, B3, B4, B5, B6. Portions of these projects are aimed at data collection, development of uniform data bases and provision of basin wide data information systems. It is necessary to initiate a good data base system early in order not to hold up analysis of projects in the near future and to assist in well informed decision making as basin planning and development progresses.

For a program to succeed, citizens in the basin need to realize early socio-economic benefits. With annual hazards and famines occurring the population cannot wait for an extensive planning program to be completed before water resource development projects are constructed that will provide early socio-economic benefits to several countries in the basin. National politicians and government administrators also need to know that the program is directed towards benefits to their people so that they can maintain support for the program. Such an undertaking will be implemented through project D5 entitled "Identification of national and joint projects to promote basin-wide cooperation among the Nile countries". Requirements for project development and implementation include hazard mitigation, multi-purpose water resources development, hydropower and regional energy guides, watershed management and others as identified by the riparian countries. Emphasis must be placed on the early identification of these projects such that the development and implementation of three or four of these projects can be planned, designed, constructed and managed to provide multiple

benefits to several countries within the Nile Basin.

The identification of high priority regional projects should take place as soon as practical. Preliminary planning, feasibility studies, project concepts and securing of funding should be carried out in the following months. Final designs and project construction could extend over the next 3 to 10 years, depending on the size of the projects. This is a long time period before citizens in the Nile basin countries will realize tangible benefits of regional cooperation. This indicates the urgency to select and initiate water resource developments in the very early stages of the Action Plan.

Initiation of water master plans can take place in an orderly fashion as funding, trained staff and appropriate data become available. Water master plans will be initiated through project A2.

The immediate initiation of the early phases of Project D3 would provide the initial momentum to start the regional cooperation process. Completion of the early phases of Project D3 should provide agreement on the nature and scope of the required executing agency (possibly TECCONILE). The following steps should be considered to develop an orderly impetus towards regional cooperation:

(a) agree on the coordinating/executing agency (TECCONILE);
(b) agree on the Action Plan;
(c) agree on sub-basins to be selected for early study and development;
(d) agree on data bases related to preciptation, evaporation, flows, population, food requirements, land capability, etc.;
(e) agree on criteria for appraising water requirements, sub-basin by sub-basin;
(f) agree on water quality objectives;
(g) agree on water-sharing formula(s);
(h) agree to work towards an agreement and the mechanism to do it;
(i) agree on enforcement mechanisms; and
(j) agree on dispute settlement mechanisms.

4.0 POTENTIAL DONORS

4.1 OVERVIEW

In order for the Action Plan to be successfully implemented, full support of the national governments is needed, and participation by External Support Agencies (ESAs) becomes vital.

The components of the Action Plan comprise activities that require international expertise, know-how and, above all, funds. Multilateral and bilateral ESAs have been providing assistance and loans to various countries of the basin for the past four decades.

Some ESAs would find the idea of regional cooperation through regional projects quite appealing due to reasons such as decreasing grant funds, geopolitics and an overall belief that many of the development problems can only be solved within a basin-wide approach. Such an approach eliminates or diminishes risks of potential conflicts, regional unrest and imbalance in regional development.

The components of the Action Plan contain activities that are considered by all ESAs to be essential elements for rational and sustainable development of the Nile River Basin. The main issue thus rests within the capacity of the executing agency (TECCONILE) and the willingness of the member countries to endow it with the appropriate authority, responsibility and financial resources. An early step is to agree on high priority projects that can be implemented in the near term.

4.2 POTENTIAL EXTERNAL SUPPORT AGENCIES TO SUPPORT THE ACTION PLAN

Assistance from ESAs is provided in terms of technical assistance, equipment, training and financial assistance, and it may be in the form of grants and/or loans.

The community of ESAs can be categorized in three groups, multilateral agencies, bilateral agencies and non-government organizations (NGOs).

4.2.1 Multilateral Development Agencies

These are United Nations Agencies, such as UNDP, UNEP, FAO, WMO and WHO. However each one of the above mentioned agencies has its own field of interest or priority. UNDP, for example, may be a candidate sponsor for projects in capacity building and institutional support. Their role in the development of international river basins has been impressive in a number of cases. Moreover, their pre-investment activities in several river basins such as the Mekong, OMVS, Lesotho Highland waters have successfully brought in capital investment funds for building the required infrastructure.

In the UN system, the World Bank is the agency for loan investments, (which may be soft loans with very low interest), while the role of UNDP is to supply pre-investment assistance in the form of grants directly or through the specialized agencies of the UN system (FAO, WMO, WHO, the World Bank and others), such as its earlier support to Hydromet through WMO. In addition, all specialized agencies, besides funds channelled by UNDP through them and their appropriation of funds from their regular budget, can raise grant money through special funds for various purposes with the participation of their member states. This is the case, in particular, of UNEP and FAO with UNEP having a specific mandate in conservation of the environment.

The Action Plan may also find a good source of financing through the Global Environmental Facility (GEF) of the UNDP/World Bank. GEF was established to play a leading role as a multi-lateral funding mechanism to provide new and additional financial resources through a mix of grant and concessional funding. One of the four priority areas of GEF concerns international waters.

The United Nations Capital Development Fund (UNCDF) of the UNDP offers a good opportunity for investment in water supply projects, small irrigation schemes, credit banks for farmers, and other development activities. Since most of the Nile River Basin countries are classified as LDC, capital investment through UNCDF/UNDP remains very promising.

UNEP has been providing technical assistance in the field of sustainable development and environmental protection in many international river basins, including the Nile River Basin. UNEP remains a potential support agency for the Nile Action Plan, especially in conducting the proposed diagnostic studies and other preparatory activities in the Environmental Protection and Enhancement Component.

The Food and Agriculture Organization (FAO) has been involved as a specialized executing agency for UNDP and other ESAs in providing valuable assistance to the Nile River Basin countries, and is still interested in pursuing that assistance on a regional basis. Moreover, FAO, has through it Technical Assistance Funds, provided technical expertise to most of the Nile basin countries.

Other international agencies such as the World Bank, the African Development Bank, the International Fund for Agricultural Development (IFAD), Kuwait Fund and the European Community provide development grants and loans to individual countries.

In order for TECCONILE to qualify for these loans, its legal status must be acceptable to the lending agencies, or the member countries benefiting from the proposed development must be signatories to financial agreements.

4.2.2 Bilateral Agencies

Many bilateral ESAs are experiencing fiscal difficulties and are pursuing deflationary fiscal measures intended to reduce public sector deficits aggravated by the economic slow down affecting them since 1989. In the midst of policy measures implemented to curb public spending, aid appropriations have often been targeted for cost cutting. Moreover, major new competing claims are being made by the aid needs of Central and Eastern European countries and the former Soviet Union. There is also significant absorption of aid funds to meet major emergencies, such as wars, droughts, famine and natural disasters. Nevertheless, bilateral agencies (e.g. CIDA) are already assisting TECCONILE and Nile basin states and are good candidates to provide assistance in implementing the Action Plan.

4.2.3 Non-Government Agencies

Non-government agencies provide grants and technical assistance, usually at the grass roots level. Their involvement in the development of the Nile River Basin, might be on a community based level, or in the field of applied research.

4.2.4 Follow Up

It is proposed that the Action Plan be distributed to all potential donors and that these donors be invited to a seminar to be held in one of the Nile countries to discuss the Plan and express interest in sponsoring the activities that respond to their aid policy. As agreed during the June 1994 meeting of the Technical Committee, a donor's meeting will be held in Cairo in November 1994.

5.0 IMPLICATIONS FOR TECCONILE

5.1 MANAGEMENT CHALLENGES

The Action Plan, when revised and adopted, will require management decision making on a number of levels. Decisions will be required on arrangements among the Basin States and with ESAs. Decisions will be required on financial allocations, staffing, scheduling, contracting, etc. for projects. Also, day to day operational decisions will be required on regular Secretariat functions.

The Action Plan faces several management challenges which can be grouped as related to intensity and space. The intensity challenges relate to the fact that the Action Plan will be a major exercise with large components of national, regional and international inputs conducted over a short time frame. The space challenges relate to the enormous geographic extent of the Nile Basin and the difficulties of transportation and communications over the Basin.

The intensity challenges will require an infrastructure and support staff which must have

the capacity to meet the requirements of the peak periods. These requirements will include office space, administrative facilities, support staff and personnel. The space challenges likewise will require that the needs for communication and transportation be met at all times.

5.2 POTENTIAL SOLUTIONS TO THE MANAGEMENT CHALLENGES

The traditional way of meeting challenges such as these has been to hire a staff from the international community of specialists who are available on a continuing basis. The model is generally that a "project" office is established and staffed by a combination of international and regional specialists, with local personnel assigned as counterparts. The model has worked well in situations where there is a clearly defined project output required such as a construction project. This model, however, does not guarantee that there will be management and technical capacity left in the region following completion of the project.

Another way to conduct projects has been to use existing staff within existing regional or national organizations. This approach in some cases fails to generate the confidence of the international financial agencies, due to a lack of demonstrated experience in successful completion of complex projects. The benefits of having regional organizations heavily involved in projects, however, is clear from a capacity building perspective. Individuals and organizations with training and experience in the management of complex projects facilitate the task of obtaining international support for identified projects.

The goal for the management of the Action Plan would be to select the best of both approaches outlined above. The suggestion would be to separate the management of the overall Action Plan from the management requirements of particular projects within the Action Plan. This proposal would have an organization such as an Action Plan Coordinating Group primarily responsible to the TECCONILE Technical Committee for the overall management. The TECCONILE Secretariat would be responsible for their existing functions, together with project management for those particular elements (eg the Atlas

project) which the Nile Basin States agree will be on-going responsibilities of the Secretariat.

Under this scenario some Action Plan projects could be conducted and managed by specific Nile basin countries. The identification of the project management responsibilities could be made on a regional basis with respect to the matters of most interest, the existence of infrastructure, or the need for strengthened infrastructure. Decisions on specifics of which projects are to be managed, and by whom, could be made cooperatively through discussions with the Ministers and/or TC members.

The regional project operations could link with existing infrastructure in the selected locations. The project operations could report to the Action Plan Coordinating Group on technical matters with other direction taken from regional representatives of the TC. Linkages to the national governments could be through existing reporting relationships.

One key ingredient in the structure outlined above is a shared and common management information system or set of protocols. Such a system, if put in place in various regions of the Nile Basin, would assist in the development of the managerial capacity within the basin. This capacity, when combined with the existing capacity in the basin states would assist in national or regional projects either within or outside of the action plan.

Table 2 (page 28) shows the personnel requirements for management of the Action Plan. There is a requirement for nearly 600 person months within a span of about 60 months. Consequently, TECCONILE will have to develop a highly qualified team to coordinate and manage the priority activities within the Action Plan. About ten professional staff may be required.

In addition, support staff will also be required. Support staff would include administrative personnel, secretaries, technical assistants, computer operators, draftspersons, and drivers. In total, there should be an allowance to accommodate about 20 personnel in adequate office space.

The question still remains though, how will TECCONILE be upgraded to handle all of the immediate and near term projects? The Action Plan should not be used to build TECCONILE into a gigantic bureaucracy. This could cause friction in some countries if TECCONILE was viewed as encroaching on the territory of existing national government departments. TECCONILE should be a recipient of information from existing agencies and should be given a role in which it serves all of the water management departments in the basin. Only if everybody benefits from an effective TECCONILE will the Action Plan be implemented cooperatively and successfully. Emphasis has to be placed on properly upgrading and strengthening TECCONILE in a manner that is acceptable to all countries.

In order to manage and coordinate the immediate and near term projects, perhaps assistance should be acquired from national and international experts serving as consultants to TECCONILE. This type of expertise could also provide advisory services as to how TECCONILE should build up their long-term management, technical and administrative staff.

There are also funding requirements to provide for office space, equipment, hiring personnel, training personnel, annual salaries, national and international experts, and operation and maintenance costs. Funds for these items should be provided through Project B1.

6.0 CONCLUSIONS

The following conclusions summarize the content of the Action Plan and delineate actions that are suggested to attain successful implementation of the program. The conclusions are based on the results of the recommendations of the member country participants at the Entebbe workshop in June 1994. The results are in turn based on the best information available and the assumptions made within each of the recommended projects or programs.

1. The Action Plan includes 22 projects/programs that extend over a period of about five years.

2. The estimated cost of the Action Plan is U.S. $100 million. This figure, plus the personnel requirements listed below, indicate that the existing draft Action Plan is overly ambitious and may need to be revised.

3. In order to implement, coordinate and manage the Action Plan, the following personnel requirements are estimated:

   - International Consultants (2,000 person months)
   - National Consultants (3,800 person months)
   - TECCONILE (600 person months)
   - National Governments (2,000 person months)

4. Conclusions 1, 2 and 3 do not provide for actual construction and management of any water resources development projects. Active construction and project development will be carried out in follow-up phases.

5. A strong effort should be put forth by the riparian countries to develop a framework for international cooperation and for the equitable use and allocation of Nile waters. The Action Plan should become an integral part of such basin-wide agreements.

6. The riparian countries must reach agreement on the scope and structure of TECCONILE, or its successor organization.

7. If TECCONILE is to coordinate and manage the Action Plan program as the agent for member countries, then that organization needs to be strengthened to ensure that it has sufficient implementation capability to successfully administer the program.

8. Substantial efforts need to be made to obtain funding for the Action Plan. The member states must see to it that all of the necessary measures to "market" the Action Plan are undertaken, and that all potential donors are given the opportunity to provide comments and suggestions that may enhance funding opportunities. The appropriate strategy for approaching the donors should include the following steps:

   - effective measures to promote the need for cooperative development of water projects within the Nile River basin;

   - a united front by the riparian countries in support of the Action Plan;

   - analysis of each ESAs policies, interests and fields of assistance and

determination of the best communication focal points;

- preparation of technical, socio-economic and other material to support the Action Plan;

- visits to ESA headquarters to present the Nile Action Plan satisfy the donors queries and convince each ESA on the viability of the Nile River basin development; and

- review the Action Plan on an annual basis at Technical Committee meetings with some structured involvement of relevant ESAs.

9. The Technical Committee should initiate a process that will begin to identify priority projects/programs. This report suggests the following priorities:

- securing funding;

- agreement on the scope and structure of TECCONILE or its successor organization as an executing agency and then proceeding towards the strengthening of that body;

- ensure input and responsibility by the national governments;

- development of standardized and upgraded water resource and environmental database systems;

- personnel training within TECCONILE and national government agencies;

- the early identification and construction implementation of water resources development projects that will enhance the economic and social welfare of citizens in the basin;

- begin to develop a framework, among basin countries, for regional cooperation in the management of Nile waters; and

- continuation with the remainder of the Action Plan in a fully integrated and cooperative atmosphere as funding and personnel become available.

ANNEX 1

REFERENCES

ANNEX 1

LIST OF REFERENCES

Background Documentation Concerning Nile Basin Cooperation Regarding Water Management

1. "The Nile - Resource Evaluation, Resource Management, Hydropolitics and Legal Issues", prepared for publication by P.P. Howell and J.A. Allan for a conference held in London at the Royal Geographical Society and the School of Oriental and African Studies, University of London, May 2-3, 1990.

   - see particularly "Historical View of Development of Nile Water" by R.O. Collins

2. Report of the Technical Cooperation Committee for the Promotion of the Development and Environmental Protection of Countries, December, 1992. Document TEC1/93.

3. Proceedings of Nile 2002 Conference at Aswan, Egypt (February 1-6, 1993), "Comprehensive Water Resources Development of the Nile Basin: Getting Started".

4. Report of Second Ministerial Meeting of Nile Basin Countries, Cairo: January 18-20, 1994.

5. Proceedings of Nile 2002 Conference at Khartoum, Sudan (January 29 - February 1, 1994), "Comprehensive Water Resources Development of the Nile Basin: The Vision Ahead".

   - see particularly "The Development in the Nile Basin" by Yahia Abdel Mageed

ANNEX 2

PRACTICAL MEASURES FOR SUPPORTING REGIONAL COOPERATION IN WATER MANAGEMENT AMONG NILE BASIN COUNTRIES

ANNEX 2

Practical Measures for Supporting Regional Cooperation in Water Management Among Nile Basin Countries

	TOPIC	POSSIBLE ESA
A.	Preparation of Action Plan	CIDA
B.	Completion of Diagnostic Study	UNEP
C.	Water Resources Atlas for Nile Basin	CIDA
D.	Environmental Degradation (Water Hyacinth Control, Watershed Management)	FAO
E.	Modern Water Resources Data Bank (Using HYCOS)	FAO
F.	National and Regional Water Resources Strategies	FAO
G.	TA/Training in Water Management Strategies	WB/EDI
H.	GIS or EIS Systems	FAO
I.	Support for future Nile 2002 Conference	CIDA
J.	New NGO (INBA)	CIDA
K.	Lowland Rice Development	FAO
L.	Water Resources Management and Information	FAO
M.	Identification of Development Projects	
N.	Update of the Water Balance of the Nile	

NOTE:

This table included in Statement by Nile Basin Countries at Nile 2002 conference in Khartoum, January 29 - 31, 1994.

ANNEX 3

LIST OF PARTICIPANTS

ACTION PLAN WORKSHOP - JUNE 13 - 15, 1994

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13 - 15 JUNE, 1994
ENTEBBE UGANDA

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ANNEX 4

ACTION PLAN WORKSHOP OUTLINE

ANNEX 4

ACTION PLAN WORKSHOP OUTLINE

DATE	SESSION	TIME	TOPIC	CHAIR
Monday/13	1	0900-1030	Introductory Session - Plenary	PK
ACTION PLAN WORKSHOP				
	2	1100-1230	Action Plan Goals and Process; Short Term Objectives	PK
PART ONE: ACTIVITY AREAS - Review and Prioritize				
	3	1400-1530		MNE
	4	1600-1730		MNE
	5	1745-1900		MNE
Tuesday/14	6	0900-1030		MNE
	7	1100-1230	Part One Conclusions	MNE
PART TWO: ACTION ITEMS AND PRELIMINARY WORK PLAN - Define Project Packages				
	8	1400-1530	Introduction	MM
	9	1600-1730		MM
	10	1745-1900		MM
Wednesday/ 15	11	0830-1045		MM
		1100-1500	**OFFICAL CEREMONY WITH MINISTER**	
	12	1500-1630	Part Two Conclusions	MM
	13	1700-1900	**CONCLUDING SESSION - PLENARY**	PK

ANNEX 5

SUMMARY OF ACTION ITEMS
ACTION PLAN WORKSHOP - JUNE 13-15/94

COMPONENT	TIME FRAME*			
	Immediate	Near Term	Medium Term	Total
A- Integrated Water Resources Planning and Management	-	3	3	6
B- Capacity Building	2	4	-	6
C- Training	-	1	1	2
D- Regional Co-operation	2	2	2	6
E- Environmental Protection and Enhancement	-	5	9	14
	4	15	15	34

*Definitions

- Immediate Action: Begun and/or completed in 1994
- Near Term Action: Begun before the end of 1995
- Medium Term Action: Begun in 1996, or later where phasing so dictates

PRELIMINARY OUTPUT
ACTION PLAN WORKSHOP June 16/94

A. INTEGRATED WATER RESOURCES PLANNING AND MANAGEMENT

Near Term Action

A1 Improved Water Management Procedures.

(a) Develop consistent guidelines for water resources planning, EIA's and public awareness to ensure sustainable development, updating and integration, including water conservation and efficient water use.

(b) Develop methodology and tools for updating national water master plans and to support national capabilities for EIA's, economic analysis and resource master plans.

(c) Set up procedures for assessing environmental, social and economic impacts of proposed river and lake regulation and development plans/scenarios.

A2 Initiate basin-wide information systems. - (FAO).

A3 Assessment and analysis of water resources availability including groundwater and demand for irrigation, livestock water supply, rural water supply and water quality, especially in arid to semi-arid areas.

Medium Term Action

A4 Review/development of national water master plans.

A5 Assess the impact of potential climate change on water resources availability (prolonged droughts) and quality in the basin and investigate mitigation measures.

A6 Update the water balance of Lake Victoria.

B - Capacity Building

Immediate Action

B1 Review and transfer existing hydromet models and initiate new models.

B2 Water Resources Atlas of the Nile Basin. (action underway)

Near Term Action

B3. Capacity building in integrated water resources management.

(a) Strengthen regional and national water resources and environmental agencies to improve hydrometric, monitoring, forecasting and assessment capabilities.

(b) Strengthen capabilities in national and regional data management, including integration of resource data with socio-economic and environmental data.

(c) Strengthen national hydrometeorological and hydrologic networks for all parts of the basin including water resources monitoring, sediment and water quality processes and measurement procedures/analysis. National and regional data banks and communications systems should also be strengthened.

(d) Review and strengthen water quality/quantity data bases.

B4. Strengthen TECCONILE's ability to plan, manage and coordinate.

This project will provide technical assistance to TECCONILE and will be prepared after discussions with TECCONILE.

B5. Identify existing regional centres of expertise within the basin and strengthen these as a springboard to overall enhancement of regional capabilities.

B6. Improve data collection, analysis and management systems.

Design and install modern data collection, analysis and basin wide information systems including remote sensing and strengthen national capabilities in data management.

C - TRAINING

Near Term Action

C1 Specific needs assessments - regional training institutes.

(Not a separate project; implicit in relevant activities of all elements of the action plan).

Medium Term Action

C2 Comprehensive assessments/actions

(a) Comprehensive needs assessment
(b) Long term training component
(c) Design of Human Resources Development (HRD) program

D - Regional Cooperation

Immediate Action

D1 Inventory of existing and proposed regional cooperation and activities.

The objective of this project is to develop an information base on all activities related to the Nile River Basin.

The duration of this project will be two months. Terms of Reference will be completed by June 18th by CIDA consultants.

The project will be executed by TECCONILE.

D2 Roster of expertise in water resources management in the Nile River Basin countries.

The objective of this project is to build up a data bank of available experts and institutions specialized in disciplines related to integrated river basin development.

The duration of the project will be two months. Terms of Reference will be completed by June 18th.

The project will be executed by TECCONILE.

Near Term Action

D3 Nile Basin Co-operative Framework

(a) Review existing TECCONILE and other relevant basin institutional arrangements and recommend appropriate basin-wide multidisciplinary framework for legal and institutional arrangements leading to equitable allocation of the Nile waters.

(b) Develop and implement a process with clear objectives, methodology and activities that will lead to determination of equitable and legitimate right of water use in each riparian country. This should include identification of applicable/appropriate international rules and principles governing the equitable use and allocation of the Nile waters, and consideration of sub-basins and lakes.

(c) Analyze the existing policies and legislation for regulation of shared water bodies like Lake Victoria.

D4 Public Awareness and Participation

This project will entail regional programmes aiming at enhancing public awareness of efficient water use and management, conservation and environmental protection, as well as the Nile 2002 Conference and the proposed NGO called "INBA."

Medium Term Action

D5 Identify national and joint projects that would promote basin-wide cooperation, such as those below, in order to achieve economic growth within an environmentally and socially sustainable framework:

a. hazard mitigation
b. multipurpose water resources development
c. evaporation reduction from water surfaces
d. water conservation and efficient use
e. hydro-power and regional energy grids

D6 Programmes/projects in integrated water resources development and conservation including watershed management (e.g. soil conservation and silt management).

ENVIRONMENTAL PROTECTION AND ENHANCEMENTS

Near Term Action

E1 Review, strengthen and develop national and regional institutional arrangements for environmental protection and enhancement through :

a. strengthening and standardizing water quality measurement procedures and equipment.

b. strengthening and developing water quality monitoring, assessment, procedures and standards.

c. developing and/or improving data collection, sharing of data and co-operative data collection.

The above activities should lead to:-

a. Establishing realistic national and regional water quality guidelines for river flows (particularly at border crossings).

b. Reviewing and establishing water quality standards/ objectives for various water uses.

E2 Water and land environmental protection and enhancement.

(a) Control of water weeds, especially water hyacinth, and pollution in the equatorial lakes (Lake Victoria and Upper Nile).

(b) Land use, degradation, siltation of water bodies especially Kyoga basin.

E3 Protection of rare animal parks vegetation.

E4 Diagnostic studies (UNEP).

E5 Harmonization of policy in Lake Victoria subregion.

Medium Term Action

E6 Water quality analysis including sharing of laboratory facilities.

E7 Sediment monitoring.

E8 Assessment of sources and levels of pollution.

E9 Analysis of lake processes including the consequences of pollution.

E10 Review, harmonize and develop national policies and regulations for pollution control.

E11 Wetland encroachment and impact on water resources.

E12 Need for integrated approach to watershed management.

E13 Soils/vegetation analyses.

E14 Environmental audits.

CRITERIA FOR ACTIVITY SELECTION:

1. Objectives can be substantively advanced to show visible results within a 2-year time period.

2. Should be tangible benefits for all basin countries, including those who are not presently members of TECCONILE, to encourage future basin-wide co-operation.

3. Consider external donor support factors including:

    - Donor constraints.
    - Donor priorities.
    - Activities donors are already prepared to finance.

4. Activities that can be carried out by member countries and national consultants.

5. Consider projects where a lot of work has already been done.

6. Capacity of existing basin co-operative institution(s) to realistically carry out required work, including consideration of:

    - Constraints in present arrangements.

    - Opportunities to enhance such as:

        - Enhancement of TECCONILE Secretariat to address real needs.

        - Technical assistance to TECCONILE.

7. Relevance to Ministers' agreement at Kampala in December, 1992 and in Cairo in December, 1993.

PROJECT PROFILE - OUTLINES

1. BACKGROUND & JUSTIFICATION

2. OBJECTIVES.

   -Immediate
   -Long term

3. OUTPUTS

4. ACTIVITIES

5. SCHEDULE

6. INPUTS

   -Sources
   -Types

7. INSTITUTIONAL FRAMEWORK

   -Implementation strategy
   -Responsibilities

8. BUDGET

   -Sources
   -Amounts

ANNEX 6

PROJECT PROFILES

A. INTEGRATED WATER RESOURCES PLANNING AND MANAGEMENT

PROJECT TITLE

A1 Assessment and Analysis of Water Resources Availability and Demand For Water Resource Uses

Background and Justification

The preliminary prerequisites to the development of water resources planning and management in any country or within any river basin is firstly to fully and completely understand the amount of water supply that is available. The second prerequisite is to be able to account for all present water uses and what the demand for water uses will be in the near future and the far future.

Water resource planners and managers should recognize the variations in supply during wet and dry cycles and similarly the variations in water requirements during such cycles. Socio-economic factors such as population growth; elevation of standards of living, agricultural developments, industrial developments and effects on the environment must all be considered. In order to develop an integrated approach within the Nile basin, each riparian country should provide an assessment of their water supply availability and demands for water uses. The assessment and analyses should all be carried out utilizing standardized methodologies.

Objectives

(a) Develop a standard approach and format for the assessment and analysis of water resources availability within each riparian country and at strategic locations within the Nile River Basin.

(b) Provide an assessment of the availability of water at strategic locations within each country and within the Nile River Basin.

(c) Develop a standard approach and format for the assessment and analysis of water resource demands within each riparian country and at strategic locations within the Nile River Basin.

(d) Provide an assessment of the demand for water at strategic locations within each country and within the Nile River Basin.

(e) Make projection of water availability versus demand under various acceptable assumptions for given time horizons.

Outputs

1. Identification of selected study points or strategic locations within each country or within the Nile River Basin to develop water supply data and water demand data.

2. A standardized approach and format displaying water supply availability and water demand requirements at selected study points or key locations within the basin.

3. A preliminary simplistic water balance analysis (supply vs. demand) at selected study points outlining water supply deficits and surpluses related to wet, median and dry years.

4. A simulation of water supply and water use projections under various assumptions, for given time horizons.

Activities

1. Collect available hydrological data within the Nile Basin. Review the Hydromet process for the following:

   (a) selection of study locations;
   (b) approach;
   (c) procedures;
   (d) methodology for developing water supply availability.

2. Recommend the continuation, strengthening or modification of the Hydromet approach. Achieve agreement from all riparian countries.

3. Considering a basin-wide approach, select and finalize strategic locations or "selected study points" (SSP) for analyses related to surface water supply availability and water use demands.

4. Review and analyze the existing water supply and meteorological measurement stations in the basin. Recommend upgrading of existing stations and where additional stations and equipment should be installed. Install, calibrate and monitor the upgraded and new stations. Ensure the inclusion of state-of-the-art systems such as radio signals, telemetry and satellite communication systems.

5. Review water supply measurement procedures in each country. Outline commonalities, discrepancies and differences. Recommend a standard approach for all countries to adhere to.

6. Develop a computerized system relating field water supply measurements to development of a data bank illustrating recorded flows at SSP.

7. Establish a format, procedures, methodology and develop monthly/weekly natural flows at the selected study points (SSP's) for a realistic time period (50 years where possible) utilizing existing records, hydrologic and generation techniques.

8. Review analyses of strategic existing reservoirs and lakes with man made controls to determine their capability to provide firm water supplies based on natural flow data and future flow forecasting.

9. Identify all the known groundwater aquifers in each country.

10. For each groundwater aquifer compile an inventory of existing information:

    (a) geographic location
    (b) size, extent
    (c) source
    (d) yield
    (e) water table elevations
    (f) existing withdrawals or uses
    (g) significant drawdown
    (h) recharge capability
    (i) forecasted capability to provide future water supply

11. In each country, select sub-basins to analyze present water uses and to predict future water uses. Review, inventory and report on legal or institutional arrangements that allow water users to withdraw water from surface water bodies or ground water aquifers in each country. Recommend institutional arrangements.

12. Review existing water use measurement techniques and procedures in each country. Define commonalities, discrepancies and differences in measurement techniques and analyses of overall water uses. Recommend standardized measurement and analyses techniques and procedures for accurately measuring and analyzing water uses. Achieve agreement on a standardized approach from all countries. Establish the procedures and assist all countries in implementing the procedures.

13. Review water use measurement equipment in all countries. Provide recommendations for upgrading, replacing or providing new equipment. Develop a budget and schedule for purchase of the equipment.

14. On a sub-basin basis within each country, provide an inventory on present uses and a prediction of near future and far future uses (related to socio-economic projections) for the following categories of water use shown below:

    (a) rural
    (b) village
    (c) city and other consolidated groups
    (d) livestock
    (e) irrigation

(f) water quality
(g) industrial development
(h) hydropower
(i) evaporation losses
(j) other uses or losses

Develop a standardized format, procedures and methodology for determining present uses and a sound basis for predicting future uses (i.e. population growth and/or resource base related to industrial development). For each of the above purposes provide the following information:

(a) present use

(b) present sources for supplying this water

(c) present legalized withdrawals

(d) anticipated future uses based on a projected growth over the next five years, ten years and 30 years

(e) adequacy of the present water supply sources to meet the projected requirements

(f) possibilities of water being a constraint to future growth or food production

15. Develop a computerized, mathematical water resources management model (WRMM) that can be utilized to carry out water balance studies on rivers, lakes and reservoirs.

(a) This model should be utilized for river basin planning analyses.

(b) This model should be used as a planning tool with the primary goal of assessing the impact of various operational policies or structural developments on a river basin

(c) The model should be set up to simulate the entire Nile River Basin with many reservoirs, lakes, diversions for domestic, irrigation and industrial use and apportionment agreements amongst all basin countries.

(d) The model will utilize precipitation, evaporation, natural flow data and present and predicted water uses, as inputs.

(e) The model should have the capability to simulate and analyze various operational policies and planning scenarios related to existing and future developments in the basin and provide surplus and deficit water supplies

at each SSP dependent on the development scenario that is being analyzed.

(f) The process should include:

- Review and provide an inventory of existing computerized models in the basin.
- Analyse data that presently exists or will be available for use in the model.
- Review modeling procedures developed for similar hydrological conditions, being used throughout the world, and modeling packages meeting the Nile purpose and conditions.
- Select and recommend a WRMM to be developed for the Nile River Basin.
- Ensure data collection programs are initiated that will provide accurate data for operation of the model. Data requirements will include natural flow data at SSP, evaporation, precipitation, water uses, lake level measurements, physical system data (channel configurations, network layout and cross sections, storage/elevation curves for reservoirs, outflow vs. elevation curves for outflow control structures) and operational priority policies.

Inputs

Professionals (national, regional and international)

- Water Resources Planning Specialist
- Statistical Hydrologist
- Operational Hydrologist/Hydrology Equipment
- Hydrogeologist
- Water Resources Administrator/Licensing Specialist
- Water Resources/River Basin Planning Modelling Expert
- HRD/Training Specialist

National Governments

- Counterparts
- Trainees
- Logistical Support

TECCONILE

- Coordination
- Management Services

Equipment and Material

- Office space, office equipment and furniture within each country for the study team
- Computers and peripheral equipment (printers, plotters and others)
- Communication and transportation equipment
- Stream gauging equipment, lake and river level recording equipment as required
- Water quality monitoring mobile laboratory

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the Governments. TECCONILE as an executing agency will sub-contract some project components and will manage the sub-contracts. The Governments will provide all the necessary assistance such as data and information and will assign counterpart staff to follow up the project activities. The project will be implemented in two phases namely a technical assistance cum preparatory phase of 12 months that will lead to an investment phase of approximately 36 months.

Budget

Phase 1

International Consultants (60 person months)

- Water Resources Planning Specialist (6 person months)
- Hydrologist (12 person months)
- Operational Hydrologist (12 person months)
- Hydrogeologist (6 person months)
- Water Resources Administrator (6 person months)
- HRD/Training Specialist (12 person months)
- Modelling Expert (6 person months)

National Consultants (240 person months)

Phase 2

International Consultants (150 person months)

- Water Resources Planning Specialist (12 person months)
- Statistical Hydrologist (36 person months)
- Operational Hydrologist (12 person months)
- Hydrogeologist (12 person months)
- Water Resources Administrator (6 person months)
- Modelling Expert (36 person months)
- HRD/Training Specialist (36 person months)

National Consultants (600 person months)

Equipment and Material to be decided following completion of Phase 1.

Estimated Budget

Phase 1	
International Consultants	
60 person months at $20,000 (inclusive)	1,200,000
National Consultants	
240 person months at $5,000 (inclusive)	1,200,000
Phase 2	
International Consultants	
150 person months at $20,000 (inclusive)	3,000,000
National Consultants	
600 person months at $5,000 (inclusive)	3,000,000
TECCONILE	
Management and coordination 100 person months at $5,000	500,000
Government	
200 person months at $5,000	1,000,000
Equipment	1,000,000
Sub-total	10,900,000
Contingencies 15%	1,650,000
Total estimated budget US$	**$12,550,000**
Say	**$12,500,000**

PROJECT TITLE

A2 Review/Development of National Water Master Plans

Background and Justification

Some of the riparian countries in the Nile River Basin are in the process of developing Water Master Plans. The long term and short term objectives of TECCONILE include the following statement; "To assist participating member states in developing national water master plans and their integration into a Nile Basin Development Action Plan".

In order to ensure that each of the National Water Master Plans can be integrated into an overall Nile Basin cooperative arrangement, standardized approaches, procedures, methodologies and outputs have to be developed so that each National Water Master Plan can be integrated, communicated and evaluated on the same basis.

Objectives

(a) Review each national water master plan in terms of consistency of approach progress, schedule, constraints and anticipated outputs.

(b) Recommend how the riparian countries can assist each other in producing national water master plans.

(c) Recommend where external support is required.

(d) Set up procedures for reviewing the progress of the development of Water Master Plans in each country.

Outputs

1. Water Master Planning in each riparian country utilizing a standard approach and methodology similar to all other countries in the Nile Basin.

2. Components, activities and related schedules and budgets established for each National Water Master Plan.

3. An evaluation or monitoring process is in place to ensure that Water Master Plans are progressing as scheduled and that consistent, accurate information and data are being produced.

4. Comparable National Water Master Plans prepared for each country in the Nile Basin.

5. Establishment of a mechanism for riparian countries to provide assistance to each other in developing water master plans.

Activities

1. Review and assess progress of Water Master Plans (WMP) in each country.

   (a) Review and agree on consistency of approach.

   (b) Review and inventory components and activities within each plan.

   (c) Establish schedules, person months and equipment requirements and budgets for all components and activities.

   (d) Establish outputs to be achieved from each plan.

   (e) Review constraints and ensure that each WMP is able to progress without delay.

2. Establish procedures, schedules and budgets for each National Water Master Plan.

3. Set up a mechanism whereby riparian countries will provide assistance to each other in developing WMP's.

4. Set up an evaluation or monitoring system within the Nile Basin to review each National Water Master Plan to ensure the following items are being achieved.

   (a) Quality and accuracy of work.

   (b) Approaches and procedures are consistent with other countries and the long term integration of cooperative development within the Nile River Basin.

   (c) Progress on schedules.

   (d) Progress in line with agreed to budgets.

   (e) Outputs within prescribed schedules and budgets.

5. Review and agree on Final National Water Master Plans.

Inputs

Professionals (national, regional and international)

- Water Resources Planning Specialist
- Water Quality/Environmental Specialist
- Hydrologist
- Operational Hydrologist
- Water Resources Computer Modelling Specialist
- Legal and Institutional Specialist
- Water Resources Management Administrator
- Social-anthropologist
- Economist
- HRD/Training Specialist
- Agricultural Specialist
- Irrigation Specialist
- River Regime Specialist

National Governments

- Counterparts
- Trainees
- Logistical Support
- Development of Independent Water Master Plan
- Professionals and Support Staff

TECCONILE

- Coordination
- Monitoring and Evaluation Services

Equipment and Material

- Each country provides office space, office equipment and furniture
- Computers and perpheral equipment
- Communication and Transportation Equipment

Institutional arrangements and implementation strategy

The project will be coordinated by TECCONILE on behalf of the national governments to ensure overall consistency.

The national governments will each be responsible for producing their own Water Master Plan. They may sub-contract some project components and will independently manage the sub-contracts. The national governments will be responsible for collecting and analyzing all data and information and will assign staff to carry out the project

activities.

The national governments will be responsible to report their approach, procedures, progress, outputs, schedules and expenditures to TECCONILE on a regular basis.

TECCONILE will be responsible for monitoring the progress of each National Water Plan to; ensure progress, consistency of procedures and results and assurance that all factors can be readily accommodated in a basin-wide cooperative program.

A three year (36 month) time period has been projected to allow for all countries to develop their Water Master Plans.

Budget

International Consultants (84 person months)

- Water Resources Planning Specialist (6 person months)
- Water Quality/Environmental Specialist (6 person months)
- Hydrologist (6 person months)
- Operational Hydrologist (6 person months)
- Hydrogeologist (6 person months)
- Water Resources Computer Modelling Specialist (6 person months)
- Legal and Institutional Specialist (6 person months)
- Water Resources Management Administrator (6 person months)
- Social-anthropologist (6 person months)
- Economist (6 person months)
- HRD/Training Specialist (6 person months)
- Agricultural Specialist (6 person months)
- Irrigation Specialist (6 person months)
- River Regime Specialist (6 person months)

National Consultants (300 person months)

- Water Resources Planning Specialist (36 person months)
- Water Quality/Environmental Specialist (24 person months)
- Hydrologist (24 person months)
- Operational Hydrologist (24 person months)
- Hydrogeologist (24 person months)
- Water Resources Computer Modelling Specialist (36 person months)
- Legal and Institutional Specialist (12 person months)
- Water Resources Management Administrator (24 months)
- Social-anthropologist (24 person months)
- Economist (6 person months)
- HRD/Training Specialist (36 person months)
- Agricultural Specialist (15 person months)
- Irrigation Specialist (15 person months)
- River Regime Specialist (12 months)

Equipment and Materials

- Scientific equipment, software and miscellaneous for 10 countries.

Estimated Budget

International Consultants	
84 person months at $20,000 (inclusive)	$1,680,000
National Consultants	
300 person months at $5,000 (inclusive)	$1,500,000
TECCONILE	
40 person months at $5,000 (inclusive)	$ 200,000
Governments	
800 person months at $5,000 (inclusive) (for 10 countries)	$4,000,000
Equipment	
Scientific equipment, software and miscellaneous for 10 countries	$ 500,000
Sub Total	$7,880,000
Contingencies 15%	$1,182,000
Total estimated budget US$	**$ 9,062,000**
Say	**$ 9,000,000**

PROJECT TITLE

A3 Assess The Impact of Potential Climate Change on Water Resources Availability (Prolonged Droughts) and Water Quality in the Basin and Investigate Mitigation Measures

Background and Justification

Several universities are carrying out research studies on the effects of climate change related to possible global warming trends. The University of East Anglia, UK, apparently carried out a preliminary assessment of the affects of global warming over northeast Africa. Recent variations in precipitation and fluctuations in Nile River Basin flows are indicators that these items deserve further research. To date, several studies indicate that it is too early to draw firm conclusions from climate change research. This matter is of great importance to the Nile Basin countries and should be further researched. In the event that possible climate changes could cause changes in precipitation and available water supplies, mitigative measures should also be investigated.

Objectives

(a) To find out what research has been and is being done on climate change and its potential effects in the Nile Basin.

(b) To appraise the effect such changes may have on water development and use in the Nile Basin.

(c) To determine mitigative measures that are needed, what form they might take and whether they are practical.

Outputs

1. A preliminary assessment of possible effects on water supply availability and water quality related to climate change in the Nile River Basin.

2. Recommendations on possible mitigative measures related to changes in water supply and water quality due to possible climate changes.

3. Recommendations for further research into effects of possible climate change.

Activities

1. Prepare a short list of individual climatologists/meteorologists or consulting firms with state of the art experience or research work in climate change.

2. Prepare terms of reference to carry out a study on an impending climate change. The terms of reference should:

   (a) be specific to the Nile River Basin;

   (b) involve research of other related studies and their findings;

   (c) try to draw conclusions from previous or ongoing research work or studies;

   (d) delineate possible effects of climate change on water supply availability, precipitation and water quality within the Nile River Basin;

   (e) outline possible mitigative (flood and/or drought proofing) measures if the predictions are that some significant changes could occur in the Nile Basin;

   (f) provide recommendations on further research studies.

3. Request proposals from the short list of consultants.

4. Commission the study to the consultant who submits the best proposal.

5. Review the consultant's study findings and recommend further analyses or work that has to be carried out.

6. Riparian countries agree/disagree to continue climatic research work or implement mitigative measures.

Inputs

A consultant, university or universities contract

Institutional arrangements and implementation strategy

The contract will be managed by TECCONILE staff on behalf of the national governments. The study is to be a preliminary assessment only and based on existing information.

Budget

Allow $240,000 US for a 12 month international consultancy and consultant's study.

PROJECT TITLE

A4 Update the Water Balance of Lake Victoria

Background and Justification

Lake Victoria is the second largest inland lake in the world. It is subject to large variations in water levels and is stated to be ecologically unstable. Population density in the catchment area is high. The area exhibits high economic growth potential but is jeopardized by environmental degradation. The lake is subject to pollution, deterioration of water quality and in particular significant portions of the lake are suffering growth and coverage by water hyacinth. During the 1960's the lake was subject to high increases in water levels, since that time water levels seem to be decreasing. High growth levels of population are dependent upon the long term ecological sustainability of the lake. Information and data on water resources availability, water use and future water demand are needed to develop appropriate policies and strategies for sound, sustainable management of this water body. All of the riparian countries bordering on Lake Victoria are concerned and have a common interest in planning, management, monitoring and protection of the lake water and related environmental resources in the lake region.

Objectives

(a) Review and/or develop the data base necessary to carry out water balance modelling studies of Lake Victoria.

(b) Review and /or develop the methodology and tools necessary to carry out a water balance study of Lake Victoria.

(c) Provide an update on the water balance of Lake Victoria and a practical procedure for periodical updating and refinement.

Outputs

1. An up-to-date water balance analysis of Lake Victoria.

Activities

1. Review and assess all previous water balance analyses carried out on Lake Victoria.

2. Outline the data requirements necessary to carry out a new water balance study on the lake. Review available data, outline the data gaps and implement a data collection program.

3. Review and assess the methodologies and tools used in previous water balance analyses.

4. Accept previous methodologies and tools, modify or recommend new methodologies or tools to ensure that state-of-the-art methodologies and tools are employed to carry out the current water balance. During final selection of methodologies, ensure that the analyses can be easily replicated and updated in future years as additional data becomes available.

5. Finalize methodology and selection of tools and equipment. Recommend approach to riparian countries and receive their acceptance, modification or necessary changes.

6. Implement the water balance analyses as agreed to by the riparian countries.

Inputs

1. Required data base to be provided by the national governments.

2. A consultant contract to carry out the initial review and all of the follow up water balance analyses.

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the national governments. TECCONILE will be responsible for managing and coordination of the consultant's contract. The project will be implemented in three distinct phases: (1) review and assessment of previous work; (2) data collection and development of methodology and tools; (3) water balance analyses.

(1) The first phase will consist of a review of all previous work and recommendations for additional data gathering and updating methodology and tools.

(2) Phase 2 will implement the data collection program and development of methodology and tools.

(3) The last phase will consist of carrying out the water balance analyses.

It is estimated that the project could be carried out over a three year period with Phase 1 covering approximately 12 months.

Budget

Phase 1

Allow $240,000 US for a 12 month consultant's study

Phase 2 and Phase 3 can only be budgeted following the completion of Phase 1.

B. CAPACITY BUILDING

PROJECT TITLE

B1 Institutional strengthening and technical support to TECCONILE and Nile Basin Riparian countries.

Background and Justification

The Technical Cooperation Committee for the Promotion of the Development and Environmental Protection of the Nile Basin (TECCONILE) was established by agreement of the Ministers responsible for water in December 1992 as a transitional three-year follow-up arrangement to the Hydromet Survey Project.

The Hydromet Survey Project which was a cooperative venture of Burundi, Egypt, Kenya, Rwanda, Sudan, Tanzania, Uganda and Zaire, with Ethiopia as an observer, operated from 1967 to 1992 for the establishment of a hydrometerological network for data collection and the development of a water balance model to simulate the hydrological system of the lakes and their catchment. The model was developed based on Fortran IV language and was operated on a main frame computer in Nairobi. Recently, the model was transformed to operate on personal computers, and was transmitted to the member countries.

The objectives of TECCONILE as formulated by the Ministers are the following:

- Long-Term Objectives:
  - To assist participating countries in the development, conservation and use of the Nile basin water resources in an integrated and sustainable manner through basin-wide cooperation for the benefit of all.
  - To assist participating countries in the determination of the equitable entitlement of each riparian country to the use of the Nile waters.
- Short-Term Objectives:
  - To assist TECCONILE in implementing its mandate in management and coordination of the implementation of the Nile River Basin Action Plan.
  - To assist participating member states in developing national water master plans and their integration into a Nile Basin Development Action Plan.
  - To assist participating member states in developing the infrastructure, capacity building and techniques required for the management of the Nile basin water resources.

Rationale for the Proposed Project

During the period 13th and 17th June, 1994 the TECCONILE Technical Committee members and observers from Egypt, Sudan, Ethiopia, Tanzania, Uganda and Zaire, met in Entebbe and drafted an Action Plan for the Nile Basin development. This meeting was co-sponsored and facilitated by the Canadian International Development Agency, in response to the request prepared by the basin countries who met at the Nile 2002 conference in Khartoum in February, 1994.

The Entebbe Workshop participants, after considerable discussion, recommended a number projects to be included in the Action Plan. The categories of the activities of the Action Plan, as decided by the Workshop are the following:-

- Integrated water resources planning and management.
- Capacity building
- Training
- Regional cooperation
- Environmental protection and enhancement.

Three of these categories correspond to activity areas agreed by Ministers in Kampala & Cairo, and two additional areas resulted from discussions and deliberations during the Workshop, namely, regional cooperation and environmental protection and enhancement.

Capacity building is, in itself a critical activity, as well as a basic condition for present and future performance of TECCONILE. It should be patterned after activities involved in integrated planning and management, regional coperation and environmental protection and enhancement. Capacity building should be addressed from the outset in the most efficient manner with an appropriate form of assistance to transfer comprehensive operational and managerial know-how and procedures, as required by the complex mnagement issues facing TECCONILE. From experience, the most efficient way is by association with a qualified management firm that will transfer the management skills and organization setting to TECCONILE in the course of the Action Plan, and ensure it that TECCONILE is fully capable to follow-up without assistance, before the end of the Action Plan.

During the Technical Committee meetings that took place immediately after the Action Plan Workshop, the T.C. members concluded that in order for the TECCONILE to efficiently implement the Action Plan, specific immediate institutional and technical actions are urgently needed. It was noted that the institutional framework in which the implementation of the Action Plan takes place is a critical component in TECCONILE'S transitional period. Sustainable regional integrated development has often suffered due to absence of institutions with proper authority/know-how to coordinate actions in the fields of integrated water resource planning and management, capacity building, training, environmental protection and above all regional cooperation. Moreover, the T.C. meeting concluded that in order to maintain efficiency and professionalism within the organization of TECCONILE, this can be achieved through improved facilities,

provision of scientific equipment, documentation and comfortable and work efficiency oriented surroundings, especially that the present premises need extensive upgrading to create an office that can function adequately.

One other important issue raised during the Technical Committee meetings is related to the mathematical models that have been developed by Hydromet, and their effectiveness at this time.

The group of software packages developed by the Hydromet Project known as the hydrological model of the upper Nile represents the most important model for Nile hydrology. It includes programmes to insure basic data processing and setting up basic files (daily flow). This part of the model, which is still used to this date by TECCONILE, constitutes the only operational trans - national information system for the Nile basin. It should be indicated however, that this software and its files are treated on old hardware (8" disks under IBM 3740 format on an IBM 370 computer). This is hardware no longer used in industrial countries and is therefore sentenced to disappear within the next few years. Nevertheless, the model has recently been transformed for use on personal computers. It was the opinion of the Technical Committee that the fast development in mathematical modelling may bring forth the opportunity of assessing the feasibility of adopting a new generation model or set of models which would increase the efficiency of the use of mathematical models.

Furthermore, the Action Plan prepared by the member and observer countries of the TECCONILE relies heavily on management and coordination input by TECCONILE or a similiar organization. An important project included in the Action Plan is the creation of a cooperative framework for the Nile basin countries to ensure regional cooperation, and eventually, equitable sharing of the Nile water resources. It is expected that this approach will lead to the joint investment in, and management of, the necessary projects and activities indispensable for the sustainable development of the Nile basin resources.

Given the magnitude of this desired cooperation and the importance of good coordination of planning, development and management of the basin's natural and human resources, TECCONILE, as it may evolve, as well as the national institutions involved in the Nile Basin, will require long term and substantial institutional strengthening and support to allow for sustaining the outputs of this partnership among the Nile countries.

The project is expected to provide the necessary technical and institutional support to TECCONILE at its headquarters and to establish and strengthen a network of liaison and coordination facilities in the member states. This network will allow better communication and coordination at the rational levels and within the Basin, allowing timely decisions, and avoiding overlaps and duplication that may affect regional cooperation. This project will be built up in three separate phases.

Objectives of the Project:

(a) To improve the working environment and physical facilities of TECCONILE headquarters in Entebbe.

(b) To assess the utility and effectiveness of the existing Hydromet model and provide alternative solutions including upgrading and updating of the models to operate on modern hardware and related software.

(c) To assess the roles of TECCONILE and member states in data processing, gathering of operational data and use of models.

(d) To prepare an implementation plan for modelling and data management, specifying tasks and responsibilities for countries and TECCONILE.

(e) To improve the efficiency of TECCONILE in planning, management and coordination of regional co-operation activities.

(f) To enhance inter-basin coordination on matters related to Nile basin development.

(g) To enhance the capacity of TECCONILE to evolve into a basin wide integrated planning body, with clear objectives and strong institutional capacity in regional planning and management, as well as the capacity to negotiate with and acquire assistance from international lending agencies and donors, on behalf of the member states.

(h) To create a centre of excellence and research on the Nile River Basin, to encourage applied research on Nile basin resources development, and other technical issues, for the benefit of all basin countries.

Outputs:

1. Improved working conditions for more motivated and productive staff.

2. Refurbishment of existing office and equipment.

3. Improved performance in planning, management and coordination both at TECCONILE and in the participating basin countries.

4. An assessment of existing models and proposed alternatives (solutions).

5. Roles and responsibilities of TECCONILE and member countries, well defined.

6. Efficient planning, coordination and management of the River Nile Basin development and cooperation, at the basin level and member states level.

7. An effective river basin body capable of initiating, and promoting investments and international assistance and cooperation for resources developments.

8. A sustainable network of regional cooperation, exchange of information, data and knowledge.

9. A centre of excellence, reference and research on the Nile river basin resources, fully documented and accessible to all Nile basin researchers.

Activities:

The activities of this project will be conducted over a period of five years in three phases:

Phase 1

Activities - 6 months

(a) Assess needs - improvement of premises including office space, office furniture and equipment.

(b) Prepare a cost procurement and renovation plan.

(c) Renovate the TECCONILE headquarters building and purchase the required equipment.

(d) A preliminary assessment of managerial needs within TECCONILE and preparation of a report for further action in phases 2 and 3.

(e) Examine the present modelling needs and assess the usefulness of existing models.

(f) Conduct an appraisal of available models that may be adapted for TECCONILE use, and present findings to TECCONILE.

(g) Assist TECCONILE to market the approved Action Plan to ESAs for their support.

Phase 2

Activities - 20 months

(a) Agree with TECCONILE on choice of mathematical model.

(b) Assess the training needs for proposed alternatives regarding modelling and institutional strengthening.

(c) Implement training and institutional strengthening activities.

(d) Prepare a work plan for TECCONILE, for implementation of Action Plan.

(e) Assess and define roles of TECCONILE and member countries in as far as modelling and data management are concerned.

(f) Conduct seminars and in-house workshops, study tours, attachments, etc. to improve TECCONILE planning and management capabilities.

(g) Conduct periodic reviews with TECCONILE management.

(h) Prepare and submit periodic and adhoc reports.

Phase 3

Activities - 60 months

The provision of institutional support for TECCONILE to enhance management skills will include the following activities.

(a) Transfer functional and managerial skills and procedures through on-the-job training by an associated management firm, appropriate workshops and seminars, in order to establish the complete capability of center of excellence for Nile River basin development;

(b) Organize planning structure and coordination mechanism as required;

(c) Review and analyze procedures and avenues to mobilize investments and external assistance, and design a methodology and approach in agreement with the specific nature and institutional structure of TECCONILE;

(d) Establishment of the mechanism for regional cooperation, including the definition of communication interface and focal points of communication, cooperation procedures, institutional arrangements, staffing and related mandate, authority and responsibilities;

(e) Establishment of a modern documentation center in an appropriate location of the Nile Basin with a branch (or a correspondent) in each one of the riparian countries. The center should offer, eventually the most complete documentation of all past activities and events concerning the Nile River Basin (reports, data collection, essays, analyses, and others) which were produced in the Nile Basin and elsewhere. The cooperation of external sources of documentation should be sought, in order to collect specific documentation, as may be required. The center should be managed by a chief librarian (initially a foreign consultant) assisted by the required staff each national branch should be managed by a trained librarian. The center should be able to reproduce, duplicate and disseminate, on a cost recovery basis, all relevant information and data.

Inputs

Phase 1 and 2 will include the following inputs:

Construction sub-contracts
Procurement sub-contracts for furniture and scientific equipment
Senior planner - International
Advisors - International and national
Study tours, workshops

Management services, under sub-contract to a firm specialized in large river and lake basin development and water resources management will be involved in Phase 3. The firm will provide the services of international and national experts as described below.

	International	National
- Specialist consultancy in large river and lake basin development, water resources planning and management, human resources development and institutions	72 p/m	200 p/m
- Consultancy in legal aspects, human resources development, institutional arrangements, information system and management	40 p/m	120 p/m
- Librarian	24 p/m	36 p/m
- Specialist in human resources training through workshops and seminars	12 p/m	24 p/m
- Monitoring by the Technical Committee	_____	14 p/m
Total	**148 p/m**	**394 p/m**

Institutional arrangement and implementation strategy

For Phase 1 and 2 the support could be provided by a consulting firm with management and engineering expertise. The institutional and management support to TECCONILE will be implemented through the services of a qualified management firm that will provide all the necessary resources required for the project. TECCONILE will be the beneficiary of this project. Monitoring of the performance of the firm can be undertaken by a monitor recruited by the Technical Committee, which will act as a steering committee for this project. Governments will provide all the necessary administrative and logistical support to the project team. This portion of the project will be initiated as soon as funds are available and will span a five year period or until TECCONILE demonstrates qualified management capability to the satisfaction of the national governments. These activities can be implemented in three phases as outlined above.

Estimated Budget

Phase 1 & 2

32 person months at $20,000 (inclusive)		$ 640,000
Cost of refurbishing the TECCONILE premises		$ 100,000
Cost of furniture and scientific equipment		$ 100,000
Contingencies 15%		$ 126,000
Estimated total budget		$ 966,000
	Say	**$1,000,000**

Phase 3

International specialists	
148 pm at $20,000 (inclusive)	$ 2,960,000
National specialists	
380 pm at $5,000 (inclusive)	$ 1,900,000
Governments (Technical Committee)	
14 pm at $5,000 (inclusive)	$ 70,000
Seminars and workshops	
5 at $50,000	$ 250,000
Cost of premises arrangements, partition, shelves system and other documentation center facilities	$ 100,000
Equipment for the main documentation center (computer and peripherals, printing, reproduction, binding and others)	$ 100,000
Cost of reference materials periodicals publications (for 5 years)	$ 500,000
Equipment for branches	$ 200,000
Sub-Total	$ 6,080,000
Contingencies (15%)	$ 912,000
Total for Phase 3	$ 6,992,000
Total Estimated Budget Phases 1, 2 & 3	**$ 7,992,000**
Say	**$ 8,000,000**

PROJECT TITLE

B2 Atlas of the Nile River Basin

Background and Justification

Quality Information is the key to sound decisions. This is particularly true with respect to the management of scarce resources which are shared among jurisdictions. In the case of shared scarce resources, discussions on the management of these resources are facilitated by ensuring that each party to the discussions is confident in the quality of the information base which they are using. Likewise it is important that each participant be assured that other parties are operating from a similar information base.

Ten countries currently share the Nile Basin. The pace of development of water resources within the basin has been slowed in recent years due to requirements of international financial organizations. These requirements stipulate that in order to obtain project financing, agreements must be reached by all parties in the affected watersheds. Agreements have been slow in coming in part due to inequalities in information bases which are available to member states.

Technology exists which can facilitate development and sharing of resource based data. This technology can likewise assist in establishment of standards and protocols. Spatially referenced technologies (GIS) can be used in concert with remote sensing to develop, store and analyze information.

One approach to the development of a shared water resources information base is the production of a Water Resources Atlas. Such an Atlas would be produced in both hard copy and in digital files and would be maintained as a living document. The feasibility of the production of such an atlas from existing information was demonstrated by Spider International Ltd in 1994. The demonstration atlas was produced by collecting data from several countries within the Nile Basin and international sources, reviewing the data and combining where appropriate and producing the document using CAD technology.

The interest in the Atlas Project among Nile Basin Countries is high as is demonstrated by participation in recent workshops and discussion groups. The goal now is to establish the capacity to continue the Atlas project within the Nile Basin States.

During a workshop on the Atlas project which was held in Entebbe, representatives of the Nile Basin States reached preliminary agreement on the contents of the atlas. The following points were also raised regarding existing information systems in basin states:

(1) There is no standardization of protocols for information collection, storage or analysis including considerations of scale.

(2) There is no centralised storage of information pertaining to water resources management within the basin member states.

(3) Data are often lost.

(4) The level of computer availability for water resources planning in the basin states ranges from good to almost non-existent.

(5) The level of training and financial support for personnel in data collection, analysis and interpretation is highly variable in the basin states.

(6) There are programs in place in most of the basin states to collect additional information on either entire countries or large areas of countries through the use of remote sensing and application of GIS. These programs are not coordinated with other member states and often not coordinated within countries.

(7) With respect to the information which is available, there are differences in standards used between countries. This is evidenced by review of the several national atlases which have been produced. Differences exist for example with respect to the measurement conventions used, the classification systems used, and with respect to the use of scales and representation of scales.

The potential for planning of water resources on a regional basis is therefore also limited by the constraints listed above. A basin wide atlas project will begin the process of achieving standards and protocols which will make sharing of data and discussions for water resources planning much easier.

The capacity required for the atlas project would include establishment of a centre within the Nile Basin for the collection, storage, analysis and retrieval of information contained in the Atlas. Comparable centres may be established in each of the Nile Basin Countries. Each centre would be equipped to the level required to enable coordination of information from each member state. Strategies would be implemented for standards development and implementation, human resources development, communication and transfer and storage of information

One significant problem which was identified during the workshop on the Nile Basin Atlas in Entebbe was the lack of facilities for long term storage (and subsequent retrieval) of information in many member states. There was a general consensus that many member

states would benefit from having access to storage and archiving of spatially referenced information at a centralized facility to which there was ready access by the member states.

An outline of a program to develop the capacity for the development, maintenance and operation of the Water Resources Atlas of the Nile Basin is presented below. The program would be developed in two phases. Phase 1 would involve continued assessment of the feasibility of the transfer of technology to the Nile Basin, Phase 2 would involve the actual transfer of technology to the Nile Basin States. These Phases are described below.

Phase 1

- Phase 1 of the project would end in March 1995.

Objectives

a) Assessment of the feasibility of the Nile Basin Atlas concept to facilitate regional water resources planning among the Basin States and to assist in obtaining financing for projects from international financial organizations.

b) Consolidation of information used in the demonstration Atlas and production of additional demonstration materials.

c) Assessment of feasibility for transfer of technology and capacity building to the Nile Basin to continue work on Nile Basin Atlas and to use atlas as a living document.

Outputs

1) Development of concept for establishing the capacity to continue the Nile Atlas project in the Nile Basin member states.

2) An organizational structure for the management of the proposed activity.

3) Definition of equipment needs to meet the capacity building objectives.

4) Definition of staffing and personnel to meet the needs.

5) Definition of training needs to meet the capacity building needs and identification of delivery mechanisms.

6) Assess the feasibility of the concept as presented.

7) Produce budgets, schedules and statements of roles and responsibilities.

8) Produce an approach to the development of protocols for information development which will facilitate exchange of information.

9) Definition of level of detail and parameters which are required to meet the needs of a water resources atlas of the Nile Basin.

Activities

1) Reach Agreement on what demonstration materials will be produced.

2) Obtain satellite and associated data and incorporate with existing digital files.

3) Produce demonstration materials.

4) Develop a list of contents for inclusion in the water resources atlas of the Nile Basin.

5) Review information requirements to meet the contents requirements with representatives of member states.

6) Prepare preliminary list of hardware and software requirements to continue atlas project and transfer capacity to the Nile Basin States.

7) Review hardware and software requirements with representatives of Nile Basin States.

8) Prepare outline of skills and training required to continue atlas project and review and discuss with representatives of Nile Basin States.

9) Develop an organisational strategy for the operation of a Nile Basin Atlas project and discuss the concept with representatives of Nile Basin States.

10) Prepare an outline of the standardization, and quality control and assurance programs which will be required to ensure continuation of the Atlas Project.

11) Discuss the programs outlined above with representatives of Nile Basin States.

12) Survey the current status of the Nile Basin states with respect to data, hardware and software, training and management systems.

13) Determine equipment, human resource development and management needs of Nile Basin States to meet the requirements of the Atlas Project.

14) Review the current structure of TECCONILE to determine the potential for this organization to manage and operate the production of the Nile Basin Atlas.

Inputs

Professionals (national, regional, and international)

- Water Resources Planners
- GIS and RS Specialists
- Training Specialists
- Mapping Specialists

National Governments

- Logistical Support
- Information availability

TECCONILE

- Coordination with member states
- Support for workshops

Equipment and Materials

Need Access to:

- Remote sensing software and hardware
- GIS software
- Printers and Plotters
- Satellite Data
- Reproduction Equipment

Institutional Arrangements and Implementation strategy

Phase One of the project will be executed by Spider International Ltd under contract from CIDA. TECCONILE will provide assistance in distribution of questionnaires to member states and collection of information on current status of information. Phase one of the project is designed to be implemented over the course of 12 months during fiscal year 1994/95. The feasibility report produced from Phase 1 will serve as a basis for decisions concerning Phase 2 of the project.

Budget

Phase 1

- International Experts (14 person months)
    - Water Resources Planners - 10
    - GIS and RS Specialists - 2
    - HRD and Training Specialists - 1
    - Mapping Specialists - 1
- National Experts (3 person months)
- TECCONILE Staff (1 person month)

Estimated Budget

Estimated Cost $145,000 US

1)	Assist in workshop at TECCONILE in Entebbe	$30,000
2)	Develop Demonstration materials	$20,000
3)	Prepare outline of technical specifications for project	$20,000
4)	Assess existing situation in Member States and in TECCONILE	$35,000
5)	Attend meeting in Arusha	$10,000
6)	Complete feasibility assessment	$30,000

Phase 2

Objectives

Phase 2 of the project would be conducted over 5 years. The first year would focus on establishment of central facilities at TECCONILE. Facilities in the basin states or in regions would be established in 2 through 5 years.

1) Put in place capacity for the operationalizing of the Nile Basin Atlas Project In The Basin States.

2) Implement strategy for the Nile Basin Atlas Project as described in the Feasibility Study.

3) Put into operation the facilities to assist water resources planning in the Nile Basin.

4) Put into operation a system for the development of information through the application of standardized protocols for information assemblage, storage, transfer and retrieval within the Nile Basin.

5) Establish a centralized facility for the storage and analysis of spatially referenced information related to water resource planning within the Nile Basin.

Outputs

- An information network within the Nile Basin states to facilitate the operation of the Nile Atlas.
- Ongoing training program for technical and managerial staff in TECCONILE and member states.
- Equipment, including computer hardware and software in Place for the production, storage, analysis and retrieval of spatially referenced information at a centralized location within the basin.

Activities

1) Produce a detailed project plan for Phase 2, including schedules, budgets, manpower loadings, procurement requirements.

2) Develop and deliver the required training program to all participants in the Atlas Project.

3) Establish and implement management protocols for the operation of atlas information centres in each of the member states.

4) Establish the operation of the central atlas production facilities which will include the facilities for the use of remote sensing data, GIS facilities and hard copy production facilities.

5) Identify sources of hardware and software which are required for the operation of the atlas project and procure and install these facilities.

6) Establish office facilities to house the required infrastructure in the basin states.

7) Establish lines of communication between the development organizations within each of the member states and representatives of TECCONILE to ensure awareness of capacities of TECCONILE.

8) Develop a concept for sustaining the operation of the Atlas project, either through cost recovery from sale of product or from direct support from member states.

9) In cooperation with the Member states develop and implement standards and protocols for the collection, storage and retrieval of geo-referenced information.

10) Continue production of the water resources Atlas of the Nile Basin.

Inputs

Professionals (national, regional, and international)

- Water Resources Planners
- GIS and RS Specialists
- HRD and Training Specialists
- Mapping Specialists

National Governments

- Logistical Support
- Information availability
- Counterpart staff
- Technical support staff for information centres
- Professional staff to coordinate assembly of natural data, to provide support to TECCONILE and to operate facilities in each nation or region

TECCONILE

- Coordination with member states
- Technical support staff for information centre
- Professional staff for operation of GIS, RS, and map production facilities and analysis and interpretation of information
- managerial staff
- Provide a centre for training staff from member states if required

Equipment and Materials

To be provided in TECCONILE

- Remote sensing software and hardware
- GIS software
- Printers and Plotters
- Satellite Data
- Reproduction Equipment
- Information storage facilities
- Digitizing tables and photogrammetric equipment
- Office equipment, communication equipment
- Vehicles and supplies

GIS software and hardware and digitizing equipment may be provided to each member state or region as would office and communication equipment.

Institutional Arrangements and Implementation Strategy

The concept of the Nile Basin Atlas is a distributed data base system. In this concept each of the Member states will ultimately be responsible for the creation and maintenance of digital databases of geo-referenced information pertinent to water resources management in each country. Each member state will be responsible for quality assurance and control and the application of appropriate standards. Member states will also be responsible for ensuring that geo-referenced information is made available on a timely basis to the central storage facilities for combination with information from other states.

The management of the information centres may reside in a technical branch of government or in a branch of central government which is responsible for map production for example. Questions such as these can be addressed during the feasibility phase of the project but final resolution can be made when phase 2 commences.

It may be more effective in certain cases if information storage centres are established on a regional basis. In such a case two or more countries may agree to establish such a centre which would then be used to coordinate information development within the region.

TECCONILE will be responsible for coordination of the Nile Atlas Project. This will include providing assistance to Member states for the establishment of the distributed data base system, management of the information on a basin wide basis, assembly of information into map format, production of map output in digital and hard copy, and maintenance and storage of information on a regional and basin wide basis. TECCONILE will assist in facilitating the assessment of the developed information base and in discussions regarding interbasin management. TECCONILE could also facilitate discussions with international financial organizations.

It may also be feasible for TECCONILE to serve as a training centre for RS/GIS applications within the Nile Basin. Such a concept could involve representatives of basin states residing in Entebbe while being trained on the software and hardware and inputting and working with data from their country or region. This concept would require some additional facilities in TECCONILE, however it may assist in ensuring the sustainability of the operation.

Budget

ESTIMATED BUDGET FOR PHASE 2

Experts	Rate	Time (person months)	Subtotals	Totals
International Experts				
Project Management		2		
Training Specialist		18		
Procurement Specialist		2		
GIS Specialist		8		
RS Specialist		8		
Total		38		
Total at $20,000			$760,000	
TECCONILE				
Manager	$5,000	60	$300,000	
Specialists	$5,000	60	$300,000	
Support Staff	$500	180	$90,000	
Equipment			$150,000	
Offices			$50,000	
Expenses			$300,000	

ESTIMATED BUDGET FOR PHASE 2 (continued)

Experts	Rate	Time (person months)	Subtotals	Totals
Total			$1,950,000	
Contingency 15%			$292,500	
SUBTOTAL TECCONILE CAPACITY DEVELOPMENT				$2,242,500
BASIN STATES				
Specialists	$5,000	150	$750,000	
Support Staff	$500	300	$150,000	
Equipment			$500,000	
Expenses			$500,000	
Total			$1,900,000	
Contingency 15%			$285,000	
SUBTOTAL BASIN STATES CAPACITY DEVELOPMENT				$2,185,000
GRAND TOTAL ESTIMATED COST				$4,427,500.US

PROJECT TITLE

B3 Improved water management methodologies and procedures

Background and Justification

In order to integrate the water resources management of all the ten riparian countries in the Nile River Basin, consistent guidelines, methodologies, procedures and common tools have to be developed for water resources planning, management and analysis.

A common basis has to be developed amongst the countries so that information, data and findings of analyses can be coherently communicated and understood within each riparian country. Standards for these procedures should be developed. Each country should attempt to achieve these standards and implement systems and procedures that will be improved, standardized and inter-communicative amongst all riparian countries.

Objectives

(a) To develop consistent guidelines for water resources planning, EIA's and public awareness to ensure sustainable development, updating and integration, including water conservation and efficient water use.

(b) To develop methodology and tools for updating national water master plans and to support national capabilities for EIA's, economic analysis and resource master plans.

(c) To set up procedures for assessing environmental, social and economic impacts of proposed river and lake regulation and development plans/scenarios.

Outputs

1. National guidelines assessed
2. National guidelines improved and updated
3. National guidelines developed to be consistent with other countries
4. Methodology and tools for national water master plans assessed
5. Methodology and tools improved and updated
6. Common methodology and tools for national water master plans developed and established for consistency amongst countries
7. Update national procedures for assessing environmental, social and economic impacts of water resources developments

8. Establish consistent inter-country procedures for assessing environmental, social and economic impacts of water resources development plans

Activities

1. Review and assess national guidelines (within the Nile Basin) for water resources planning, EIA's and public awareness

2. Develop a comprehensive set of guidelines from within the Nilotic countries

3. Outline commonalities, discrepancies and differences amongst the Nilotic countries

4. Select other countries, outside the Nile Basin, and review their appropriate guidelines

5. Develop a comprehensive set of guidelines including countries outside the Nile Basin

6. Outline additional work that each country should implement to develop consistent guidelines in accordance with the proposed comprehensive set of guidelines

7. Each national country review, assess, modify as required and agree upon a comprehensive set of guidelines

8. Establish the guidelines as agreed

9. Implement activities in each country to ensure that consistent guidelines are developed and adhered to

10. Review and assess methodology and tools available and being used in each country to develop and update national water master plans

11. Define commonalities, discrepancies and differences in methodologies and tools being used in each country

12. Review and assess methodologies and tools being utilized in selected countries outside the Nile Basin

13. From the above knowledge, prepare suggested methodologies and tools to be used in updating national water master plans

14. Riparian countries review, assess and agree on suggested methodologies and tools

15. Establish and provide a document which outlines methodologies and tools to be used in updating national water master plans

16. Assist all countries to establish the methodologies and acquire/develop the necessary tools

17. Review national procedures for assessing environmental, social and economic impacts (EIA's) of water resources developments

18. Outline commonalities of procedures, discrepancies and differences within each country

19. Review, document and inventory procedures that have been or are presently being followed in other selected countries

20. From the above knowledge, prepare an appropriate set of procedures for implementation of EIA's in the Nile River Basin

21. Riparian countries review, assess, modify as required and agree on a consistent set of procedures for EIA's

22. Establish the procedures to be consistent amongst all Nilotic countries

23. Assist each country to establish and implement the selected EIA procedures

Inputs

Professionals (national, regional and international)

- Water Resources Planning Specialist
- Water Quality/Environmental Specialist
- Operational Hydrologist/Hydrology Equipment Specialist
- Water Resources Computer Modelling Specialist
- Social-anthropologist
- Economist
- HRD/Training Specialist

National Governments

- Counterparts
- Trainees
- Logistical support

TECCONILE

- Coordination
- Management services

Equipment and Material

- Office space, office equipment and furniture within each country for the study team
- Computers and peripherals
- Communication and transportation equipment
- Planning tools

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the Governments. TECCONILE as an executing agency will sub-contract some project components and will manage the sub-contracts. The Governments will provide all the necessary assistance such as data and information and will assign counterpart staff to follow up the project activities. The project will be implemented in two phases; namely, a technical assistance phase (Phase 1) of 6 months that will lead to an investment phase (Phase 2) of approximately 12 months. Phase 1 will include development of guidelines, preparation of a document which outlines methodologies and tools to be used in updating national water master plans and will establish procedures for EIA's. Phase 2 will ensure that each country has the proper tools, equipment and trained personnel to administer and implement the guidelines, methodologies and procedures.

Budget

Phase 1

International Experts (18 person months)

- Water Resources Planning Specialist (6 person months)
- Water Quality/Environmental Specialist (2 person months)
- Hydrologist (2 person months)
- Computer Modelling Specialist (2 person months)
- Social-anthropologist (2 person months)
- Economist (2 person months)
- HRD/Training Specialist (2 person months)

National Experts (40 person months)

Phase 2

To be determined at end of Phase 1, including person months, equipment, materials and planning tools that will be required.

Estimated Budget

International Experts	
18 person months at $20,000 (inclusive)	$360,000
National Experts	
40 person months at $5,000 (inclusive)	$200,000
TECCONILE	
5 peron months at $5,000 (inclusive)	$ 25,000
Governments	
10 person months at $5,000 (inclusive)	$ 50,000
Equipment and Materials	$100,000
Total	$735,000
Contingencies 15%	$110,250
Total Estimated Budget $US	**$845,250**
Say	**$850,000**

PROJECT TITLE

B4 Capacity building in integrated water resources management.

Background and Justification:

Heavy projected demands on Nile's Water resources and the global water deficiencies forecasted over the medium and longer terms stress the need to introduce necessary measures and practices for integrated water resources management inorder to conserve and develop the water resources of the Nile.

The goal of this project is to build up the institutional and human resources capacity for the environmentally sustained, integrated and balanced management and use of the Nile water resources, on basin wide and national levels. The objectives as stated below focus on the strengthening of regional and national water resources and environmental agencies engaged in hydrometry, water resources data management and data banks, and water quality monitoring facilities.

The capacity building process initiated by this project will be implemented in two phases, namely a review and needs assessment phase, followed by an investment phase activities of the first phase will focus on examining the existing institutional set ups, data requirements for the different users, proposing organizations and staffing requirements and the planning of the investment phase. The second phase will include training, procurement of materials and the establishment and/or improvement of water resources management systems.

The indicators for project success will be the establishment and implementation of better standards, systems, and skills in key areas to enhance institutional and technical performance as described below:

(i) active interagency collaboration at national and basin level for water resources planning and allocation;

(ii) water allocation made to support the development priorities set by national and basin wide plans;

(iii) actions taken to enhance water quality based on monitoring data;

(iv) increased irrigation efficiencies.

Objectives:

(a) To strengthen regional and national water resources and environmental agencies to improve hydrometric, monitoring, forecasting and assessment capabilities.

(b) To strengthen capabilities in national and regional data management, including integration of resource data with socio-economic and environmental data.

(c) To strengthen national hydrometeorological and hydrologic networks for all parts of the basin including water resources monitoring, sediment and water quality processes and measurement procedures/analysis. National and regional data banks and communications systems should also be strengthened.

(d) To review and strengthen water quality/quantity data bases.

Outputs:

1. Institutions assessed.
2. Institutions strengthened.
3. Staff adequately prepared to conduct activities efficiently.
4. Data banks and laboratories established, developed and/or strengthened.
5. Good communications of data.
6. Well designed and functioning hydrometeorological network.
7. Improved/established standard procedures for data management.
8. Generation of reliable, timely water quality and quantity data.

Activities:

1. Review and assess water resources management set-ups of the relevant agencies, including organization, staffing, operation and facilities.
2. Review and assess data requirements for different users.
3. Identify needs.
4. Propose organization and staffing including career development solutions and their cost and stage - their implementation.
5. Engage and train staff.
6. Identify hardware & software and prepare procurement plan.
7. Establish and/or improve data management systems and laboratories according to countries' needs.

Inputs:

Professionals (National, regional and international)

- Water resources institutional specialist.
- Operational hydrologist/hydrology equipment specialist.
- HRD and training specialist.
- Data banks specialist.
- Water quality specialist.

Governments contribution

- Counterparts, Trainees.
- Logistical support.

TECCONILE

- Coordination and management services

Equipment and material

- Equipment and material for the investment phase will only be defined at the end of the study phase.

- Equipment & material for the study phase will comprise:-

  (a) Office equipment and furniture for the study team.

  (b) Computers and perspheral equipment.

  (c) Communication equipment, transportation.

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the Governments. TECCONILE as an executing agency will sub-contract some project components and will manage the sub-contracts. The Governments will provide all the necessary assistance such as data and information and will assign counterpart staff to follow up the project activities. The project will be implemented in two phases namely a technical assistance cum preparatory phase of 12 months that will lead to an investment phase of approximately 24 months.

Estimated Budget

Phase I

International experts	
20 person months at $20,000	$ 400,000
National experts	
40 person months at $5,000	$ 200,000
TECCONILE	
6 person months at $5,000	$ 30,000
Government	
20 person months at $5,000	$ 100,000
Estimated cost	$ 730,000
Contingencies 15%	$ 109,000
Total Estimated Budget US$	**$ 839,000**
Say	**$850,000**

PROJECT TITLE

B5 Review, strengthen and develop national and regional institutional arrangements for environmental protection and enhancement.

Background and Justification

In order to integrate the environmental protection and enhancement of the ten riparian countries, it is first of all necessary to strengthen and standardize the water quality measurement procedures, monitoring and assessment in the Nile River basin. Data collection methods also have to be improved, standardized and a system of cooperative sharing of data developed.

A common basis has to be developed amongst the countries so that information, data and findings of analyses can be coherently communicated and understood within each riparian country. Standards for these procedures should be developed. Each country should attempt to achieve these standards and implement systems and procedures that will be improved, standardized and inter-communicative amongst all riparian countries.

Objectives

(a) To strengthening and standardizing water quality measurement procedures and equipment.

(b) To strengthening and developing water quality monitoring and assessment, procedures and standards.

(c) To developing and/or improving water quality data collection, sharing data and cooperative data collection.

Outputs

1. Improved and standardized water quality measurement procedures in each country.

2. Improved and standardized water quality monitoring and assessment procedures.

3. Improved water quality data collection systems in each country and establishment of a network for sharing data amongst countries.

4. Establishment of realistic national and regional water quality guidelines for river flows (particularly at border crossings).

5. Establishment of water quality standards and objectives for various water uses.

Activities

1. In each Nilotic country, review and assess procedures for water quality measurement, water quality monitoring and water quality assessment.

2. Select two or three other countries outside the Nile River basin and review, assess and document their procedures for water quality measurement, monitoring and assessment.

3. Together with counterparts from each riparian country, establish a standard set of procedures for water quality measurement, monitoring and assessment.

4. Outline a work plan for each country to be able to adhere to the standardized procedures. Implement the work plan in each country.

5. Review and assess water quality data collection systems in each riparian country.

6. Select two or three countries outside the Nile River basin and review and assess water quality data collection systems and networks for sharing data throughout these countries.

7. In concert with the national government counterparts, and based on the review of items 5 and 6, develop a comprehensive data collection and networking system for each of the riparian countries.

8. Develop a work plan in each country to initiate, implement and sustain the data collection system as agreed to by all riparian countries.

9. Initiate a training program in each country to sustain the data collection system.

10. Review and assess water quality guidelines for river flows and water quality standards and objectives for various water uses in each of the riparian countries. Carry out this review and assessment in two or three other selected countries outside the Nile River basin.

11. In conjunction with all of the Nile River basin countries develop a comprehensive set of water quality guidelines for river flows and water quality standards and objectives for various water uses in each of the Nilotic countries.

12. Provide assistance to the riparian countries to develop a complementary set of water quality guidelines and standards and objectives for various water uses.

Inputs

Professionals (National, Regional and International)

- Water Quality Specialists
- Environmental Specialists
- Water Quality Modelling Specialists
- HRD and Training Specialists

National Governments

- Counterparts
- Trainees
- Logistical Support

TECCONILE

- Coordination
- Management Services

Equipment and Materials

- Office Space, Office Equipment and Furniture in Each Country
- Computers and Peripherals
- Communication and Transportation Equipment
- Water Quality Measuring and Monitoring Equipment
- Mobile Water Quality Laboratory
- Fully Equipped Central Water Quality Laboratory in Each Country

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the governments. TECCONILE as an executing agency will subcontract the project components and will manage the subcontracts. The governments will provide all the necessary assistance such as data and information, and will assign counterpart staff to follow up the project activities. The project will be implemented in two phases, namely a technical assistance phase (Phase 1) of six months that will lead to an investment phase (Phase 2) of approximately twelve months. Investment of Phase 2 will include purchase of equipment and either setting up or upgrading existing water quality laboratories and training personnel.

Budget

Phase 1

Twenty-four Person Months of International Experts:

- Water Quality Specialist: 6 person months
- Environmental Specialist: 6 person months

- Water Quality Monitoring Specialist: 6 person months
- HRD and Training Specialist: 6 person months

National Experts: 75 person months

Each Country
- Water Quality Specialist: 6 months
- Environmental Specialist: 6 months
- Water Quality Monitoring Specialist: 6 months
- Support Staff: 6 months

Phase 2

To be determined at the end of Phase 1. (Preliminary estimate given below)

Estimated Budget - Phase I

International Experts	
24 person months at $20,000 (inclusive)	$ 480,000
National experts	
180 person months at $5,000 (inclusive)	$ 900,000
TECCONILE	
20 person months at $5,000 (inclusive)	$ 100,000
Governments (in kind)	
240 person months at $5,000 (inclusive)	$1,200,000
Phase 2	
Equipment	
As proposed for all countries	$3,000,000
Total	$5,680,000
Contingencies 15%	$ 852,000
Total Estimated Budget US$	**$6,532,000**
Say	**$6,500,000**

PROJECT TITLE

B6 Basin-Wide Information System

Background and Justification

Information and data, are two basic elements that are necessary to support the implementation and monitoring of a basin wide action plan. Data and information on the Nile Basin are available in all countries but with varying degrees of quality and quantity. It is therefore of utmost importance to establish a regional data bank in the Nile River Basin and to link it with the national data banks of the various riparian countries. The data banks will be assembled upon the methodologies prepared for the National Water Master Plans and will include all data related to water resources development planning, management, conservation environmental protection sustainability and other related aspects such as surface water availability, water use, water requirements, water quality, ground water, lake levels, lake storage capacity, environmental, socio-economic and geo-references such as topography, geology, soils, land use, reliefs, etc.

This proposed project will first assist the riparian countries to either upgrade their existing data banks on the Nile River, or in other cases, will establish data banks. The national data banks will then be utilized to establish a regional data bank throughout the Nile River Basin. All the national data banks will be linked to the regional data bank through a network system either utilizing computer modems where telephone communications are adequate or through exchange of data diskettes or other networking alternatives.

Objectives

(a) To assess data base capabilities and documentation centres in each of the riparian countries.

(b) To upgrade or establish data base centres in each riparian country with standardized inputs and outputs.

(c) To establish a regional data base centre located in one of the riparian countries and also establish network links with the national data banks.

(d) To train national personnel in all matters of data bank development and data networking.

(e) To provide decision makers with integrated data on the regional level

(f) To work closely with the ATLAS ACTION PLAN group to ensure coordination and non-duplication of efforts.

Outputs

1. A regional data bank and information centre for the Nile River Basin that will strengthen water resources and environmental monitoring systems in the region.

2. Upgraded national capabilities in data and information management.

3. A network of information and data exchange established among riparian countries which will enhance basin-wide cooperation.

Activities

1. Visit each country, assess; data base capabilities, inventory of data, data records, method of updating records and data, quality and accuracy of data, methods of measurement, trained personnel, equipment available and utilized.

2. Review procedures and outputs required to standardize methodologies with each country. Agree on data gaps, discrepancies, need for new/updated approaches and procedures, equipment requirements and training for personnel.

3. Layout a work plan with each country to develop a national data bank. The work plan will include; hiring and training personnel, procuring or updating adequate equipment and facilities, standardizing approaches and procedures, implement a data collection program ensuring coordination with Project A1 and the ATLAS ACTION PLAN.

4. To establish a regional data base centre the following activities will be required.

   (a) Select the country where the regional data base centre will be located.

   (b) Determine information needed, type of data and format, analytical capability, records, system of record keeping, methods of communicating or networking with riparian countries and accessibility of data to riparian countries or other interested agencies.

   (c) Procure facilities and required equipment.

   (d) Hire and train personnel.

   (e) Layout a standardized system for; approach, procedure, collection and compilation of data, carrying out basic analyses to generate the data in a useable format, system of record keeping and updating records.

   (f) Set up a network system with the riparian countries such that data and information can be received by the regional data centre from the riparian countries and the regional centre can transmit data to each country.

(g) Establish locations throughout the Nile River Basin as key stations where data should be collected and a data base system developed within the regional data centre. These would be in addition to locations selected within each riparian country. Coordinate the selection of stations with each country. This work is to be carried out in close coordination with the previous Hydromet work, Project A1 and the ATLAS ACTION PLAN.

(h) Implement the data collection and data base compilation system.

(i) Ensure systems are in place that can analyze data and integrate the data in a useful manner such that decision makers can make well informed decisions on the regional level.

Inputs

Professionals (national, regional and international)

- Chief Technical Adviser
- Systems Analyst
- HRD and Training Specialist
- Consultants
- Support Staff

National Governments

Each country must provide the following:

- Chief Technical Adviser
- Systems Analyst
- HRD and Training Specialist
- Support Staff

TECCONILE

- *Coordination*
- Management Services
- Direct responsibility for developing, maintaining and operating the regional data centre including the following:

  (a) Procuring facilities and equipment

  (b) Hiring and training personnel including the following:

  (i) Chief Technical Adviser
  (ii) Systems Analyst
  (iii) Training/HRD Specialist
  (iv) Support Staff

(c) Hiring consultants and issuing and managing sub-contracts as required

Equipment and Materials

- Office space, office equipment, office furniture, computers and peripherals and communication and transportation equipment within each country and at the regional data centre to carry out Phase 1. More sophisticated equipment will be specified following Phase 1 and 2 of the project.

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the National Governments. TECCONILE will be responsible for managing and coordination of the project. TECCONILE will also be responsible for establishment, development, maintenance and operation of the regional data bank centre. The National Governments will each be responsible for the establishment, development, maintenance and operation of the National Data Bank Centres. The National Data Bank Centres will be required to conform with the standards set by the Regional Data Bank Centre.

The project will be implemented in three distinct phases: (1) exploratory; (2) development of national institutions; (3) processing and exchange of information.

(1) The exploratory phase will concentrate on the inventory and evaluation of existing facilities within the Nile Basin countries. A work plan will be prepared at the end of this phase to address all the needs and problems identified and to proceed to the second phase;

(2) During the development of national institutions phase, the project will assist the National Governments in either establishing data and information centres or will provide the necessary support to upgrade the existing institutions. Training of specialists and support staff (on a regional and national level) will be undertaken during this phase. This can be done through on the job training, workshops and seminars or as recommended by the Training Specialists.

(3) During the information and data processing phase each country and the regional centre, will collect data and information pertaining to the Nile River Basin (technical and socio-economic). All this data and information will be processed and stored in a unified system for the basin's countries. To arrive at this situation, the project will provide the necessary consultants, software and hardware required for the region. The project will have a regional headquarters where the regional data and information bank will be housed. In each basin country, a national data and information centre on the basin will be either established, or in other cases, upgraded.

The project will be carried out over a period of five years to allow for the development of the data-bases and the standardization of inputs and outputs. Allow 6 months for Phase 1, 18 months for Phase 2 and 36 months for Phase 3.

Budget

International Experts (120 person months)

- Chief Technical Adviser (60 person months)
- Systems Analyst (24 person months)
- Documentation Specialist (12 person months)
- Training Specialist (24 person months)

National Personnel (654 person months)

- Systems Analyst (36 person months)
- Documentation Specialist (18 person months)
- Support Staff (600 person months)
  (Support staff includes 4 technicians, 2 secretaries, computer operator, librarian and 2 drivers.)

TECCONILE (90 person months)

Governments (180 person months) 1

Subcontracts by TECCONILE to review needs and specifications and installation of the necessary computer and documentation equipment at end of Phase 2.

***Estimated Budget** - Phase 1, 2 and 3*

International Experts	
120 person months at $20,000 (inclusive)	$ 2,400,000
National Experts	
654 person months at $5,000 (inclusive)	$ 3,270,000
TECCONILE	
90 person months at $5,000 (inclusive)	$ 450,000
Governments (in kind)	
180 person months at $5,000	$ 900,000
Equipment Phase 2 and 3	
Estimated for all countries	$ 5,000,000
Total	$12,020,000
Contingencies 15%	$ 1,803,000
Total Estimated Budget US$	**$13,823,000**
Say	***$13,800,000***

PROJECT TITLE

B7 Identification and Strengthening of Existing Regional Centres of Expertise Within the Basin.

Background and Justification

It is well known that there are groups of highly qualified professionals that exist in various countries within the Nile basin. These professionals or organizations are highly skilled to carry out numerous activities outlined in the Action Plan. Their familiarity with the region and past successes related to solving regional water resource and environmental issues will be a strong asset to implementing the Action Plan. The purpose of this project is to identify this existing expertise and to involve them in implementing the Action Plan.

Objectives

To identify the regional centres of expertise and assess their capabilities in view of strengthening them to assist in implementation of the Action Plan.

Outputs

(a) A detailed report on the existing centres of expertise, including their areas of specialization, intake capacity curricula history and potential.

(b) A plan of action to strengthen a selected number of centres to act as potential recipients of students, trainees and research fellows.

Activities

a) Prepare detailed Terms of reference for the consultant and discuss at TECCONILE Technical Committee.

b) Select and mobilize consultant.

c) Preparation by consultant team of a list of existing centres of expertise and prepare a workplan including a questionnaire for an initial assessment of the centres of expertise.

d) Discuss the needs for training with the Nile Basin countries in the different subjects related to river basin development.

e) Visit the centres and assess their capacity, potential and needs.

f) Prepare a report on the findings of the consultant, with an annotated list of centres of expertise, and a proposal for strengthening a selected number of

them, including a detailed budget for that activity.

Inputs

International Experts

- Institutional specialist
- Training specialist

- Water resources specialist
- Other sectoral specialists

National Experts

- Institutional specialist
- Training specialist
- Water resources specialist
- Agricultural specialist
- Other sectoral specialists

Governments contribution in kind

TECCONILE

- Management and coordination

Institutional arrangements and implementation strategy

This project will be implemented by a specialized team of consultants, through a consulting firm.

TECCONILE will manage and coordinate the selection of the consultant and will be responsible for managing and coordinating his work on behalf of the governments.

Estimated Budget

International Experts			
-	Institutional specialist	4 pm	
-	Training specialist	4 pm	
-	Water resources specialist	3 pm	
-	Other sectoral specialists	4 pm	
	15 person months at $20,000		$300,000
National Experts			
-	Institutional specialist	4 pm	
-	Training specialist	4 pm	
-	Water resources specialist	3 pm	
-	Agricultural specialist	2 pm	
-	Other sectoral specialist	6 pm	
	19 person months at $5,000		$ 95,000
Governments			
	6 person months at $5,000		$ 30,000
TECCONILE			
	3 person months at $5,000		$ 15,000
	Total		$440,000
	Contingencies 15%		$ 66,000
	Total Estimated Budget US$		**$506,000**
		Say	**$500,000**

C. TRAINING

PROJECT TITLE

C1 Comprehensive needs assessment, long-term training and human resources development program.

Background and Justification

The short-term benefits of a training and Human Resources Development (HRD) program will include better transfer of technology, more efficient and effective operations and more motivated staff with higher morale. The long-term benefits of a training and HRD program could include more efficient and effective national institutions, more sustainable projects and better utilization of staff and resources.

Objectives

(a) To conduct a comprehensive needs assessment for training

(b) To design a long-term training component

(c) To design a human resources development (HRD) program.

Outputs

1. A list of tasks and functions that personnel and institutions will be responsible for in each country to carry out a cooperative development program throughout the Nile River basin.

2. Assessment of personnel and institutions to carry out their prescribed tasks and functions.

3. A comprehensive needs assessment program for training and HRD.

4. A long-term training component.

5. A HRD program.

6. Highly trained personnel; effective and efficient institutions.

Activities

1. Define and document the necessary tasks and functions that personnel and institutions in each country will be required to carry out and be responsible to manage.

2. Indicate institutions and associated personnel that will be directly responsible to

manage and carry out the tasks and functions as outlined in item 1.

3. For each institution, assess the following:

   The ability to clarify organizational goals and objectives by:
   - developing a clear vision for future functions of the institution;
   - differentiating between short-term "project completion" goals and long-term "sustainability" goals;
   - setting priorities for action to accomplish both the short-term and long-term vision; and
   - existence of evaluation procedures to periodically review how the organization is achieving its goals.

   Management skills of the organization.
   Level of training of management skills.
   Personnel skills and training.
   Communication skills within the organization.
   Recruitment and selection procedures.
   Job descriptions and performance objectives.
   Goal setting for personnel.
   Ability of existing personnel and organizational structure to carry out their necessary tasks and functions. Define need for training, upgrading of personnel and/or new recruitments.

4. Following activity items 1, 2 and 3, prepare a comprehensive needs assessment program for training and HRD for the appropriate institutions or agencies in each country.

5. Reach agreement with all countries and delineate both a short-term and long-term training program. Include an evaluation program to "benchmark" how well skills are being developed in relation to training objectives.

6. Design an HRD program. This program would include the short-term and long-term training programs but should be directed towards effective and long-term adaptability and efficiency of institutional arrangements. Items that should be considered in an HRD development program include:

   Setting goals:
   - short-term projects; and
   - long-term sustainability of the organization.

   Organizational design for efficiency
   Work definitions and objective setting.
   Selection and recruitment of personnel.
   Training initiative.
   Reward systems.
   Planned organizational change.
   Ongoing benchmarking of progress.

7. Implementing the training program.

Inputs

Professionals (National, Regional and International)

- HRD Specialists
- Training Specialists
- Trained Trainers

National Governments

- Counterparts
- Trainees
- Logistical Support

TECCONILE

- Coordination
- Management Services

Equipment and Materials

- Office Space, Furniture and Equipment

Computers and Printers

Training Tools, Overheads, Videos, Films, Etc.

Institutional arrangements and implementation strategy

The project will be managed by TECCONILE on behalf of the governments. TECCONILE will subcontract this work and will manage the subcontracts. The work will be subcontracted to either individual HRD and training specialists or to firms with this expertise. The governments will provide all the necessary assistance such as data, information, introduction, and cooperation with personnel and institutions and will assign counterpart staff to follow up the project activities. The project will be implemented in three phases: 1) comprehensive needs assessment, 2) defining and implementing a long-term training program, and 3) design and implementation of an HRD program.

It is estimated that the project could be carried out over a five year period with Phase 1 requiring approximately twelve months.

Budget

Phase 1 - Allow for a consultants contract to have an HRD specialist and a training specialist spend two weeks in each country and provide a detailed report on the comprehensive needs assessment. Estimated cost $300,000 US.

Distribution of budget

12 person months at $20,000 (inclusive)	$240,000
2 person months (TECCONILE management) at $5,000	$ 10,000
2 person months (Governments) at $5,000	$ 10,000
Total	$260,000
Contingencies 15%	$ 39,000
Total Estimated Budget US$	**$299,000**
Say	**$300,000**

Phases 2 & 3

International Consultants	
100 person months at $20,000	2,000,000
National Consultants	
200 person months at $5,000	1,000,000
Governments	
100 person months at $5,000	500,000
TECCONILE	
60 person months at $5,000	300,000
Travel and Expenses	200,000
Total Estimated Budget US$	**$4,000,000**

D. REGIONAL COOPERATION

PROJECT TITLE

D1 Inventory of Existing and Proposed Regional Cooperation Agencies and Activities.

Objectives:

To develop an information base on all water-based activities related to the Nile River Basin in which more than one country is or will be participating cooperatively.

Outputs:

1. The expected outputs of the survey will be largely intergovernmental in nature, but inter-state cooperation in the private sector should not be overlooked. The information gathered should include but not be limited to:

   - Inter-state agreements
   - Informal cooperative inter-state arrangements
   - Inter-state institutions
   - Regional programmes and activities by multilateral and bilateral agencies
   - Other activities.

2. Potential sources of such information should be identified by the implementing organization (TECCONILE), and approached indicating the purpose of the project and the kinds of information required. Information to be included should cover but not necessarily be limited to:

   (a) Parties to the cooperative activity or institution

   (b) Description of the activity or institution including its purposes, nature, dimensions and duration

   (c) Status of the activities

   (d) Expected follow-up actions.

Schedule

The project shall be completed in 1994.

PROJECT TITLE

D2 Roster of Expertise in Water Resources Management in the Nile River Basin Countries.

Objectives:

To build up a data bank of available experts and institutions specialized in disciplines related to integrated river basin development.

Outputs:

1. The expected list of experts and institutions by disciplines relevant to integrated river basin development. These should include but not be limited to various disciplines within each of the following fields:

   - Meteorology/Climatology
   - Hydrology
   - River processes
   - Water quality
   - Limnology
   - Land use and management
   - Water resources planning
   - Environmental analyses including EIA
   - Irrigation/Agriculture
   - Fisheries/Ecology
   - Hydropower development
   - Socio-economic analysis
   - Water law
   - Hydrogeology
   - Mathematical modelling for water resources analysis
   - Geographic Information System (GIS)
   - Remote Sensing

2. A compilation of the sources, nature and extent of expertise within the country, in a common specified format, including but not limited to the following:

   - Government agencies or authorities
   - Educational institutions
   - Consultants
   - Utilities
   - Regional training centres
   - Regional research centres
   - Private sector

This may be accomplished either directly by the implementing organization (TECCONILE), by attaining a commitment from each country to compile the required information, or a combination of the two.

3. Compile, organize and present the information obtained from all countries in a form easily accessible and understandable both in hard copy and digital form.

4. Prepare copies of the roster; provide (number to be determined) to representatives of each of the participating countries, and make copies available to other agencies at request.

Schedule

The project shall be completed by December 1994.

The roster shall be given an up-dating procedure and be revised annually.

PROJECT TITLE

D3 Nile Basin Cooperative Framework

Background and Justification:

The utilization of international rivers often requires a framework for management of the basin resources that defines relationships among riparian states, in-order to allow consultations, negotiations and cooperative development.

At the Entebbe workshop, the country representatives requested that the following three items should be addressed as related to the development of a cooperative framework:

(a) review of the existing TECCONILE organization and other relevant basin institutional arrangements and provide recommendations for an appropriate multidisciplinary framework for legal and institutional arrangements within the Nile River Basin;

(b) develop and implement a process with clear objectives, methodology and activities that will lead to determination of equitable and legitimate right of water use in each riparian country; and

(c) analysis of the existing policies and legislation for regulation of shared water bodies like Lake Victoria.

It will be important to define and adopt a careful, step by step, approach in development of the framework. The steps must be individually achievable and should lead to the desired results, ideally including a draft agreement or agreements on equitable allocation on the Nile basin waters among other results. While the participation of all basin states is important, it should also be recognized that some of the resulting actions may involve sub-basins. Thus, only those states directly concerned with those sub-basins need necessarily be involved in those specific outcomes. However, the adoption of a consistent set of overriding principles for the entire basin would be preferred.

Essential steps will include the following:

1. comprehensive study and documentation of process and institutional framework which have been used successfully in other international arrangements and negotiations such as the Mekong River agreement and Middle East peace talks, as well as within the Nile basin;

2. comprehensive study and documentation of principles utilized in various international arrangements including the Nile basin;

3. consider the results of studies on projected water availability and demands and process in the light of principles identified in 1 and 2 above;

4. propose alternative institutional framework, process and set of principles to develop draft agreement(s) on water allocation, pollution control and other issues for the consideration of relevant ministers; and

5. formulate draft agreement(s).

All steps will require integral participation by basin country representatives. Steps 1 and 2 should have the involvement of all basin states, if possible, and could benefit from both national and international consultants. Steps 3, 4 and 5 could each involve more than one group of country representatives if sub-basin issues are to be pursued. Consultants would be helpful for steps 3 and 4, but may not be involved in step 5.

It should be indicated here, that sustainable cooperative activities in the Nile Basin can best be fostered and maintained when all the riparian states have reached comparable levels of technical and institutional capacity. This requires that the countries' capacities in planning and in data availability be augmented; strengthening the capacity of the riparian states in this regard is thus essential. Activities directed at capacity building are included in the Action Plan to facilitate this project.

Objectives:

- Immediate

  (a) To attain a regional cooperative framework acceptable to all Basin countries.

  (b) To promote Basin-wide cooperation in integrated water resources development and management.

- Long-term Objectives

  (a) To determine equitable entitlements for each riparian country for the use of the Nile waters.

  (b) To enhance and promote the utilization of the Nile waters for maximum socio-economic benefits for the inhabitants of the basin.

Outputs:

1. Establishment of a functioning basin-wide multidisciplinary framework for legal and institutional arrangements

2. Development of a process with clear objectives that will lead to determination of equitable and legitimate right of water use in each riparian country.

3. Policies and legislation for regulation of shared water bodies like Lake Victoria.

Activities

1. Review the existing TECCONILE arrangements in relation to establishing a basin-wide multidisciplinary framework for legal and institutional arrangements amongst the riparian countries within the Nile River Basin.

2. Review institutional arrangements in two or three other similar or relevant river basins throughout the world. One example might be the Mekong River Basin. Contact donor institutions (such as the World Bank, Asian Development Bank and the African Development Bank) for input on institutional arrangements in other river basins.

3. Review and assess existing legal and institutional arrangements in the Nile Basin, at the national, sub-basin and basin levels and identify needs for institutional strengthening and or reform.

4. Consider and propose institutional and legal framework alternatives for adoption by member states.

5. Finalize a draft of a framework for legal and institutional arrangements in the Nile Basin and prepare an implementation plan.

6. Review existing agreements for the right of water use within riparian countries in the Nile Basin.

7. Review existing agreements for the right of water use amongst riparian countries in the Nile Basin.

8. Review international principles and practises for shared water resources and provide a summarized document outlining the principles and practises that are generally employed in a river basin similar to the Nile River Basin.

9. Review and assess existing and proposed national and regional socio-economic development programmes within the Nile Basin.

10. Review and assess the national water resources management and environmental policies and plans related to the Nile Basin.

11. Identify common grounds for complementary plans and objectives within the Nile Basin, and harmonize and reconcile the differences and overlapping goals and objectives to achieve bases for regional cooperation.

12. Consider and propose an alternative process that will lead to determination of equitable and legitimate right of water use in each riparian country in the Nile River Basin.

13. Finalize a draft process for equitable sharing of water and prepare an implementation plan.

14. National governments review the results and recommendations of Projects A4, (Update the Water Balance of Lake Victoria), E4 (Harmonization of Policy in Lake Victoria Sub-Region) and E5, (Environmental Management and Development of Sub-basins in the Nile River Basin). Within the newly established framework for legal and institutional arrangements agree on policies and legislation for regulation of shared water bodies like Lake Victoria.

Inputs

- T.O.R. for a consultant or a task force to carry out the work
- Legal and institutional advisors
- Water resources planners
- Economists
- Workshops and conferences

Institutional arrangement and implementation strategy

The project will be implemented by either international consultants or a commissioned task force. The Technical committee members will act as a steering committee for this project. The Governments will provide all the necessary assistance such as data and information and will assign counterpart staff to facilitate the work of the task force.

Budget

The budget components of this project will include the following items:-

- Cost of preparation of Terms of Reference by TECCONILE committee members, assisted by Nile Basin based advisor or international expert. The estimated cost of this activity is $30,000.

- Cost of 78 p/m of advisory services including legal, institutional, water resources planners and economists.

  - Water Resources Planners (36 person months)
  - Legal Advisory (12 person months)
  - Institutional Advisory (24 person months)
  - Economic Advisory (6 person months)

- Cost of holding conferences and workshops including travel cost for member states.

Estimated Budget

Preparation of Terms of Reference	$ 30,000
International Consultants	
78 person months at $20,000 (inclusive)	$1,560,000
National Consultants	
36 person months at $5,000 (inclusive)	$ 180,000
TECCONILE	
36 person months at $5,000 (inclusive)	$ 180,000
Governments	
36 person months at $5,000 (inclusive)	$ 180,000
Cost of Conferences and Workshop	$ 100,000
Total	$2,230,000
Contingencies 15%	$ 334,500
Total Estimated Budget US$	**$2,564,500**
Say	**$2,500,000**

PROJECT TITLE

D4 Public Awareness and Participation

Background and Justification:

The contemporary process of basin resources planning implicates various players and interest groups within the basin, and reconciles their conflicting demands and desires. In many countries, the need for public awareness, input and involvement has been formally integrated in the planning and decision making process and has become one of the building blocks of the process of integrated natural resources planning, development and management, in general, and water resources in particular. This process of public involvement is an important attempt to relate to public demands, to involve all concerned parties, and to raise awareness as to the nature, magnitude and potential outcomes, negative and positive, of water resources development.

Public awareness implies unilateral dissemination of information through all available media and alerting to current and potential issues and concerns. Public participation, on the other hand is a multilateral dynamic process of dialogue between basin authorities, experts and basin communities.

Public participation varies significantly from country to country and its effectiveness is sometimes hampered by inadequate data and information related to the issues and concerns being debated.

In the Nile River Basin, there is a great need for both public awareness and public participation. The former is important to transmit messages related to water scarcity, pollution, importance of efficient use and conservation as well as transboundary issues related to water use.

Public participation is needed in designing projects and activities in the basin to allow for bottom-up planning and eventually management. This process will enhance the chances for sustainability of development activities and their outputs.

In the past four years, a series of International Conferences entitled Nile 2002 has been initiated by the Canadian International Development Agency (CIDA) in-order to enhance basin wide cooperation among the Nile countries, through scientific meetings discussing major themes of concern related to the Nile Basin development. These conferences are held on a yearly basis in one of the Nile countries. The coming conference is scheduled in February 1995 and will be hosted by Tanzania. Such conferences are effective means for rallying cooperation and participation among the Nilotic scientists and officials, and constitute important fora for interaction with International organizations, external support agencies and international experts.

Moreover, an international NGO for the Nile, namely, "International Nile Basin Association (INBA)", is being planned. The objectives of INBA are the following:-

1. establishment of fora
2. promotion of cooperation
3. fostering rational and comprehensive development
4. dissemination of information.

This proposed project will endeavour to identify new ways and means to raise public awareness and promote public participation in the development of the Nile basin and to maintain the on-going activities, such as those of the Nile 2002 Conferences and INBA's.

Objectives

(a) To raise public awareness

(b) To promote public participation concerning water resources management within the Nile River Basin

Outputs

1. An effective public awareness programme addressing the issues of water conservation, pollution and efficient management of irrigation. Effectiveness of the campaign will be measured through surveys.

2. Involved citizens in decision making on water supply and irrigation projects reflected through village or water users committees.

3. Successful execution of, and increased participation in the Nile 2002 Conferences. The success of these conferences will be measured by the quality of research papers and topics debated.

4. The International Nile Basin Association created and operating efficiently. The membership and activities generated will be the test for the successful establishment of this association.

5. Increased interest by the External Support Agencies in Nile basin development. This can be measured by increased international technical assistance and capital investment.

Activities

A. Public Awareness and Participation Campaign

(a) Review the needs and practices of public awareness campaigns in the ten riparian countries and the degree of public participation in planning. This will entail review of existing systems of community water management committees and other existing forms.

(b) Survey of the various cultural and traditional habits in the Nile Basin.

(c) Prepare pilot campaign and test response.

(d) Adjust according to test responses.

(e) Adopt for applicability in sub-basins or in groups of countries with common cultural and traditional outlooks.

(f) Start campaign and proceed with continuous monitoring of responses.

(g) Conduct parallel monitoring by national experts assigned to the project.

(h) Assist the Governments to institutionalize the public awareness and participation activities within the relevant agencies. This activity will be assisted by TECCONILE through its head quarters and liaison offices proposed under project.

(i) Train national counterparts.

(j) Conduct first annual evaluation and a final evaluation by the assigned consultants.

B. Nile 2002 Conferences

(a) Set up the methodology and institutional arrangements for each annual conference in cooperation with the venue and theme of the particular conference to be held that particular year.

(b) Prepare outline for the Conference Agenda as well as an information guide in cooperation with the Conference Organizing Committee.

(c) Visit the conference venue to prepare for the event and set up a national organizing committee.

(d) Call for papers.

(e) Undertake all the steps to necessary for the preparation for the conference.

(f) Make all necessary travel arrangements for invited speakers and participants.

(g) Conduct and manage the conference.

C. **I N B A**

(a) Complete the registration of the NGO.

(b) Provide initial administrative support to establish the different administrative divisions and Board of Directors.

(c) Provide the necessary technical and logistical support for the first event of INBA.

(d) Provide initial support and assistance for publishing a quarterly newsletter.

(e) Provide institutional and technical support as required during the first year.

(f) Prepare a completion report, assessing INBA's activities during the first year with recommendations for improvement if necessary.

Inputs

A. **Public awareness/participation**

Sub-contract

- sub-contract to an international marketing and public relations firm, to prepare and conduct the campaign in the ten Nile countries for a period of 24 months.

International experts

-	sociologist	6 pm
-	mass media specialist	6 pm

National experts

-	sociologist	12 pm
-	community participation specialists	12 pm
-	women in development specialists	12 pm

B. Nile 2002 Conference

TECCONILE to organize and administer the conferences for a period of 5 years.

C. INBA

TECCONILE to review various alternatives to organize and establish the association and provide technical assistance for the first year.

Institutional arrangements and implementation strategy

The TECCONILE will be the focal point for the implementation of this project. TECCONILE acting on behalf of the Basin countries will provide the necessary logistical and administrative support in the sub-contractors' and individual consultants assigned to the project. The Governments of the Nile Basin countries, will in their turn provide the necessary support and introduction to the sub-contractors while working in the countries, and to that effect will assign counterpart staff to follow-up on their work.

Budget

A. Public Awareness/Participation

Sub-contract	
24 months	$1,000,000
International experts	
12 pm at $20,000 (inclusive)	$ 240,000
National experts	
36 pm at $5,000 (inclusive)	$ 180,000
TECCONILE	
10 pm at $5,000 (inclusive)	$ 50,000
Sub-total	$1,470,000
Contingencies 15%	$ 220,050
Total Estimated Budget (A) US$	**$1,690,050**

B. Nile 2002 Conference

Conference expenses	
Five conferences at $100,000 each	$ 500,000
TECCONILE Management	
15 pm at $5,000	$ 75,000
Contingency 15%	$ 86,250
Total Estimated Budget (B) US$	**$ 661,250**

C. INBA

General expenses for one year	$ 250,000
TECCONILE Management	
12 pm at $5,000	$ 60,000
Contingency 15%	$ 46,500
Total Estimated Budget (C) US$	**$ 356,500**
TOTAL FOR A, B, C US$	**$2,707,800**
Say	**$2,700,000**

PROJECT TITLE

D5 Identification of National and Regional Projects to Promote Basin-wide Cooperation among the Nile Countries.

Background and Justification

Basin-wide cooperation for water resource development is the foremost goal and ultimate objective of all activities specified in the Action Plan. In order to promote sustainable and meaningful cooperation, it is important to identify and address needs, constraints and problems of common concern and interest to all riparian states. The Action Plan for the development of the Nile River Basin specified a framework for Basin-wide cooperation which will define the relationships among riparian states and will allow them to co-operate in the planning, development and management of the basin's resources.

Among the main objectives of this cooperative framework are: a) to promote basin-wide cooperation in integrated water resources development and management; and b) to achieve the equitable utilization of the Nile waters for maximum socio-economic benefits for the inhabitants of the basin.

This project will identify national and regional needs of common interest and concern to the Nile basin countries. These activities will address issues that have significant impact on the environment, the conservation of the basin's soil and water resources, and the enhancement of socio-economic benefits through the development of water resource projects.

The proposed project will focus on the following topics.

a. Hazard mitigation

This issue includes mitigation against floods, droughts, pollution of lakes and streams, desertification and soil erosion.

b. Integrated and multi purpose water resources development

The demand for water resources in the Nile River Basin is increasing for all uses. Integrated, and multi purpose development of water resources aim at a joint development of all water resources usages required for socio-economic development. Understandably, the water resources requirement patterns of Nile countries and the urgency to meet national requirements vary according to their respective geographical attributes and prevailing socio-economic conditions. As a result, the benefits expected by each Nile country from joint water resources development and management differ, however, these benefits will extend to all Nile countries, either directly or indirectly, under an equitable, cooperation

framework. Activities under this subject may include, irrigation, water supply and sanitation, hydro electric power generation, fisheries, recreation parks and other related water usages.

c. Evaporation reduction from water surfaces

Important volumes of water amounting to over 20 billion m^3 are lost annually from swamps and marshes in the basin, such as the Sudd in Southern Sudan, and swamps and marshlands in Burundi and Rwanda.

Moreover, it has been indicated that a substantial amount of water is lost due to evaporation in the flood plains of the Baro-Akobo river system in Ethiopia, to an extent that the flow at the outlet has been diminished to 50% of its potential.

Curbing some of these losses would increase the base flow of the Nile and would bring benefits to the riparian countries. Methods to reduce evaporation from the surface of water bodies, have been applied in various parts of the world under various climatic conditions, however, with limited success to date.

The purpose of this activity will be to review some of these methodologies that may be applicable to the Nile River Basin water bodies, conduct research on their possible benefits and eventually adapt and apply them.

d. Water conservation and efficient use

In the Nile River Basin, water resources are unevenly distributed in time and in space. Moreover, the socio-economic development objectives of the ten riparian countries compete for the basin's water resources. This situation is further aggravated by recurring droughts and the ever growing imbalance between the limited water resources and the increasing demands of users. Methods for water saving could be applied through adopting appropriate technologies and upgrading of management skills to enhance efficiency in application. Moreover, the public, who is the main user of water, whether for drinking purposes or irrigation, should be better informed through proper channels of mass media communication and through extension programs on the importance of water conservation and management.

The purpose of this activity is thus to identify, select and adapt technologies and/or methodologies and procedures at the basin level and at national levels to promote water conservation and its efficient use.

e. Hydropower and regional energy grids

Throughout the Nile Basin and particularly in the upstream part of the White Nile and the Blue Nile, there is an important potential for hydropower. The yearly growth rate of the electricity demand in the Nile Basin varies from 3.5%to 12% (UNDP-1989). These needs can be satisfied from the various potential sites

throughout the basin. In Ethiopia a preliminary assessment of hydropower potentials within the Ethiopian part of the Nile Basin, has identified sites with an electric potential of 100,000 GWH/yr with Abroy alone accounting for about 80% of the total.

According to UNDP, 1989, the riparian countries of the Nile need an additional generation of about 42 Twh and a further installation of about 8,600 MW, in order to fulfil the demand until the year 2000.

Accordingly, the combined potential for hydro electric generation, is sufficient to fulfil the demands on a basin wide or sub-basin approach.

The need for a power transmission grid interconnecting the Nile countries is thus indispensable. Some countries, like, Kenya Uganda, Rwanda, Burundi and Zaire are partly interconnected, and Tanzania is considering interconnection with its neighbours. An interconnected network will undoubtedly improve the stability of the electric generation and increase the efficiency of the installed power plants.

f. Watershed management

Throughout the Nile River Basin, man made activities induce substantial changes of the eco-system. This is particularly the case of rural population activities in the Upper Nile Basin. The catchment area or watershed of a river acts as a "specific rainfall/runoff transform operator". Any change in the land occupation and use patterns, deforestation, agriculture expansion, agglomeration encroachment and others, results in related changes in the transform operator. The consequences are usually increased by flash floods causing damages, increased sedimentation processes with related river bed silting and shifting, lake sedimentation, impact on riverine fauna, on water quality and generally speaking, impact on the human community.

Watershed management includes the comprehensive set of remedial or mitigating measures to prevent or minimize the impact of unavoidable human activity on the river eco-system and undesirable changes of the hydrological and sedimentation processes. These corrective activities may include : reforestation and vegetation control, anti-erosion works and appropriate agriculture practices to avoid loss of fertile soil, sedimentation control, river training, spatial land planning according to land physical characteristics (soil suitability for prospective use, texture, slopes and others).

Watershed management activities will therefore, broadly speaking, include four different phases, namely; assessment of the watershed control and management, evaluation and prescription of remedial or mitigating measures, application on several pilot catchments representing a sample of catchment of the Nile River Basin. On the basis of the results obtained from the pilot catchments selected, large scale application may be made.

Objectives

a) To implement a degree of hazard control including forecast and warning systems.

b) To establish the basis for regional joint integrated and multi-purpose water resources development.

c) To control evaporation processes, to the extent possible by appropriate technologies applicable to the Nile River Basin conditions.

d) To ensure water conservation and efficient use.

e) To develop the hydropower potential of the Nile River Basin, according to socio-economic demands and opportunities.

f) To establish the basis for the most effective watershed management.

g) To implement selected projects that would provide benefits to several riparian countries.

Outputs

a) A documented report reviewing hazard control in the Nile River Basin, including relevant applicable forecast and warning procedures with recommendations covering policies, activities and related regulations and procedures.

b) Recommended institutional arrangements for regional joint integrated and multi-purpose water resources development.

c) A review of the existing evaporation control processes and an assessment of methodologies applicable to the Nile River Basin conditions.

d) A set of rules for water conservation and efficient use.

e) An up-dated plan for the assessment of the hydropower potential of the Nile River Basin, and its development according to socio-economic requirements and consideration of related opportunities.

f) An assessment of watershed management in the Nile River Basin based on the results of several pilot watersheds and recommendations for further actions extending to the entire Nile River Basin.

g) Identification of a number of substantive practical water resource development projects of both a national and interstate nature that when implemented will clearly demonstrate the benefits of multi-state basin cooperation.

h) Implementation of selected projects.

Activities

a) Systematic review of hazards in the Nile River Basin.

b) Evaluation of hazard control in each case including; evaluation of the damage resulting and the benefits of hazard control, relevant applicable forecast and warning procedures, recommendations as regards policies suggested, and related regulations and procedures.

c) Analysis of institutional arrangements for regional joint integrated and multi-purpose water resources development.

d) Review and sort out the evaporation control procedures and methodologies developed to date in other parts of the world; carry out a comparative analysis on the basis of Nile River Basin characteristics and prevailing conditions, review the cost and the socio-economic feasibility; if methodologies are found applicable, make appropriate recommendations for the application of methodologies applicable to the Nile River Basin conditions.

e) Preparation of rules for water conservation and efficient use based on an extensive review and analysis of prevailing socio-economic conditions in the Nile River Basin.

f) Analyze the hydropower potential of the Nile River Basin, and the hydropower demand at various time horizons; Specify appropriate development policies according to socio-economic requirements and consideration of related opportunities.

g) Review watershed management issues in the Nile River Basin and select representative areas for pilot surveys.

h) Design several pilot watershed projects and implement them.

i) Prepare recommendations for further action based on the results of the above activities, extending to the entire Nile River Basin. Identify a number of practical projects that could be implemented in the near future. These projects should clearly demonstrate the benefits of multi-state basin cooperation. The following activities outline a possible process.

- Carry out an analysis of potential cooperative activities including those identified in Project D1.

- Propose a package of activities which will meet the criteria regarding benefits to more than one basin state, which appear achievable in terms of existing and possible institutional arrangements and which would have good potential for resource input from basin states and/or ESAs.

- Propose possible/alternative institutional and funding arrangements to achieve implementation of the proposed package.
- Submit the proposal to ministers for consideration.
- Upon approval, proceed with the pursuit/implementation of selected projects, including formal approaches to ESAs where appropriate.

Inputs

International consultants (under sub-contract to a qualified firm of consultants) 116 p/m

-	Team leader, specialist in water resources development	24 p/m
-	Specialist in water resources hazards and control	12 p/m
-	Water resources economist	12 p/m
-	Legal experts	12 p/m
-	Specialist in regional institutions in integrated and multi purpose water resources development	12 p/m
-	Hydro-climatologist specialist in evaporation control	6 p/m
-	Socio-economist	12 p/m
-	Hydro-power specialist	6 p/m
-	Hydropower economist	6 p/m
-	Watershed management specialist	24 p/m
-	Environmental specialist	12 p/m

National consultants - in same field defined above 276 p/m

Group training

5 Seminars and workshops

Equipment and materials

Procurement of furniture and equipment

Travel cost

Internal travel

Institutional arrangements and implementation strategy

This project will be implemented over a period of 24 months. It will assess the needs in the fields indicated, and will attempt to define the commonalities and complementarities among the basin countries, in order that joint projects may be designed and implemented for the common benefit of the countries. The majority of this work will be carried out by national and international consultants.

TECCONILE will play an important role in managing and coordinating the consultant's mission and reporting and will thus act as the executing agency on behalf of the Basin Governments. The process of defining and implementing priority regional projects could be coordinated by TECCONILE under the guidance of a task force representing as many basin states as possible, preferably appointed by ministers. Implementation responsibilities will vary according to the nature of the activity. This process will require a number of international and national consultants to carry out much of the work.

The Governments will provide all the required information and data, as well as administrative and logistical facilities.

Estimated Budget

International Consultants	
138 p/m at $20,000 (inclusive)	$2,760,000
National Consultants	
276 p/m at $5,000 (inclusive)	$1,380,000
TECCONILE	
Management and coordination	
10 p/m at $5,000	$ 50,000
Governments	
Logistical support and contribution	
30 p/m at $5,000	$ 150,000
Equipment and materials	
Furniture and equipment procurement	$ 100,000
Group Training	$ 250,000
Travel cost	
Internal travel	$ 100,000
Total	$4,790,000
Contingencies (15%)	$ 718,500
Total Estimated Budget US$	**$5,508,500**
Say	**$5,500,000**

E. ENVIRONMENTAL PROTECTION AND ENHANCEMENT

PROJECT TITLE

E1 Water and land environmental protection and enhancement

Background and Justification

Environmental degradation is severe and accelerating in the Nile River basin. Deforestation and soil loss are major problems in the Ethiopian highlands and in the mountains of Burundi and Rwanda. Urban population and industrial growth are contributing to environmental degradation and water pollution. Phosphorus pollution has been identified as a growing problem in Lake Victoria. Lake Victoria is severely infested with water hyacinth. In 1993, FAO initiated a project entitled "Water Hyacinth Control in East Africa." As stated by FAO, "This project involves Kenya, Rwanda, Tanzania, and Uganda. The water hyacinth *eichomia crassipes* is an aquatic weed exotic to the Nile River which proliferates to form dense and extensive floating mats. The weed increases evapotranspiration, deprives phytoplankton of mineral nutrients, reduces oxygen causing fish death and changes in the fish community, and reduces water flows in irrigation canals." The objectives of the FAO project are to "formulate a project document to establish a technically sound system for water weed control in East Africa, foreseen for funding by the World Bank, and to introduce biological control of water hyacinth in the sub-region."

As stated by the UNEP report dated July 1989, "Lake Kyoga presents a special case and a host of problems. The lake, already shallow, is silting up rapidly due to widespread and increasing erosion of its watershed especially in the northern region. It is therefore recommended to carry out a project addressing the lake watershed control and management."

Objectives

(a) Control of water weeds, especially water hyacinth and pollution in the equatorial lakes (Lake Victoria and Upper Nile).

(b) Review of land use, control soil degradation and siltation of water bodies especially the Kyoga basin.

(c) Study the ecosystems of the lake basins (Lake Victoria and Lake Kyoga) in order to outline a program of watershed management and conservation of the lakes.

(d) Prepare environmental management policies including reforestation and suspension/reduction of pollutants entering the lakes.

(e) Prepare a work plan for lake watershed control, conservation of lakes and integrated development of the land and water resources of the lake basins.

(f) Train national professionals and technicians in watershed management and integrated development planning.

Outputs

1. Study on control of water weeds (especially water hyacinth) and pollution in the equatorial lakes (specifically Lake Victoria, Lake Kyoga and the Upper Nile). The study to recommend action plans to control/stop pollution and growth of water weeds (water hyacinth) in the equatorial lakes.

2. A study of the ecosystems of the lake basins complete with recommendations for a watershed management program and conservation of the lakes.

3. A detailed program of watershed control for the lakes.

4. Development of environmental management policies by the national governments.

5. A plan for integrated development of the land and water resources in the lake basins.

6. A training program in watershed management and integrated development planning.

Activities

1. Consult with FAO, World Bank and other experts that have been involved with pollution/water weed studies in the equatorial lakes and other parts of the world.

2. Determine a short list of leading experts in lake pollution/water hyacinth, soil degradation and lake siltation.

3. Select expert assistance in writing terms of reference to carry out a study on the control or prevention of lake pollution/weed growth (water hyacinth).

4. Prepare study terms of reference and request proposals from leading international experts or international consulting firms. The terms of reference would be specific to lake pollution/weed growth (water hyacinth in Lake Victoria, Lake Kyoga and the Upper Nile).

5. Select a consultant/consulting firm to carry out the study.

6. Prepare terms of reference and select consultants to carry out a study of the ecosystems (including land use, degradation and siltation of water bodies, especially Lake Kyoga) of the lake basins and recommend a program of watershed management and conservation of the lakes. The study would include

socio-economic factors and provide recommendations on environmental management policies related to the lake watersheds.

7. Following the results of the studies assist the national governments in developing:

   a weed control program;
   a detailed program for watershed control;
   environmental policies directed at conservation of the lakes; and
   a plan for integrated development of the land and water resources in the basin in accordance with environmental policies.

8. Initiate a training program in watershed management and integrated development planning.

Inputs

International Consultants

- Water Resources Specialists (40 person months)
- Water Quality Specialists (40 person months)
- Biological Specialists (40 person months)
- Weed Specialists (20 person months)
- Hydrotechnical/River Regime Specialists (20 person months)
- Forestry Specialists (20 person months)
- Training Specialists (20 person months)

National Governments

- Counterparts (60 person months)
- Trainees (20 person months)
- Logistical Support (20 person months)

TECCONILE

- Coordination (12 person months)
- Management Services (12 person months)

Equipment and Material

- To be Provided by Consultants Within Their Study Components

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the governments. TECCONILE, as an executing agency, will subcontract the project components and will manage the subcontracts. The governments will provide all the necessary assistance such as data

and information, and will assign counterpart staff to follow up the project activities. The project will be implemented in three phases. Phase 1 will involve selection of consultants who will carry out a brief review of existing conditions and previous and on-going related studies. Following this review the consultants will develop terms of reference to carry out the two studies as outlined in Activity items 3 and 6. Phase 2 will involve commissioning and carrying out the two studies. Three years is envisioned as a reasonable time frame. Phase 3 will include review and acceptance of the study recommendations, development of specific watershed action plans, and development of environmental management policies and training programs. Phase 3 should be completed over a twelve month period.

Budget

Sufficient funds should be provided to allow five international experts to work part-time over a six month period to review existing conditions, review previous or on-going related studies (i.e., FAO) and develop terms of reference for the two studies. Allow $200,000 US to develop terms of reference and commission the studies.

Estimated Budget

Phase 1	$ 200,000
Phase 2 & 3	
International Consultants	
200 person months at $20,000 (inclusive)	4,000,000
National Consultants	
100 person months at $5,000 (inclusive)	500,000
TECCONILE	
24 person months at $5,000 (inclusive)	120,000
Governments	
24 person months at $5,000 (inclusive)	120,000
Total	4,940,000
Contingencies 15%	741,000
Total Estimated Budget US$	**5,681,000**
Say	**$5,700,000**

PROJECT TITLE

E2 Protection of Rare Animal Parks' Vegetation

Background and Justification

As mentioned previously, forested areas are being dramatically reduced due to socio-economic conditions being imposed by extensive population growth. Forests are being reduced by fast growing urban centres, the increasing need for more agricultural development, firewood, pasture for livestock, and other demands. Wildlife and biological reserves are severely threatened because their native habitats are being continually decreased for socio-economic reasons. As a result, rare animals and rare animal parks are being threatened. There is a strong environmental need to protect these rare animals and their habitats or soon some of these species will become extinct. In addition, there could be definite economic losses to tourism if these animals were no longer available for aesthetic viewing.

Objectives

(a) Define areas where rare animals and rare animal parks are located.

(b) Define requirements in vegetation to ensure that these rare animals and their native habitat are protected and enhanced.

(c) Establish policies and legislation to ensure that these areas are within Environmental Protection Zones.

Outputs

1. Establishment of legal Environmental Protection Zones for rare animals and their required habitat.

2. Implement programs to maintain and enhance the Environmental Protection Zones.

Activities

1. Define the definition of rare animals. Name the species and specify habitat requirements in term of vegetation cover and food, range management.

2. Delineate the geographical areas where rare animals and rare animal parks presently exist.

3. Outline problems related to life processes and what activities are threatening their existence and native habitats.

4. Designate requirements for establishing Legal Environmental Protection Zones.

5. Establish agreement with national governments to restrict any further development in these protected zones.

6. Implement legislation and delineate these zones.

Inputs

Professionals

- International Wildlife Consultant
- Wildlife Biologists

National Governments

- Counterparts
- Trainees
- Logistical Support

TECCONILE

- Coordination
- Management Services

Equipment and Material

- To be Provided by the Consultant

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the governments. TECCONILE, as an executing agency, will subcontract the project components and will manage the subcontracts. The governments will provide all the necessary assistance such as data and information, and will assign counterpart staff to follow up the project activities. The project will be implemented in two phases, namely a technical assistance cum preparatory phase of six months that will lead to an investigation, policy development and legal framework phase of approximately twelve months. Phase 1 will include development of terms of reference for a consultants contract and commissioning of a consulting firm to carry out the study during Phase 2. An individual consultant (wildlife biologist with expert experience in rare African animals) should be commissioned in Phase 1 to prepare the terms of reference for the study in Phase 2.

The Phase 2 study will include definitions (species) of rare animals, delineate geographical areas of existence, outline activities threatening the existence of these

animals, designate requirements, and provide recommendations for legislating the animals' protection or even Environmental Protection Zones.

Budget

Phase 1 - allow $20,000 US to develop terms of reference and engage a consultant to undertake the Phase 2 study.

Phase 2 - Allow for the following personnel.

Estimated Budget

Phase 1	$ 20,000
Phase 2	
International Consultants	
6 person months at $20,000 (inclusive)	120,000
National Consultants	
6 person months at $5,000 (inclusive)	30,000
TECCONILE	
1 person month at $5,000 (inclusive)	5,000
Governments	
4 person months at $5,000 (inclusive)	20,000
Total	195,000
Contingencies 15%	29,250
Total Estimated Budget US$	**$224,250**
Say	**$220,000**

PROJECT TITLE

E3 Diagnostic Studies (UNEP)

Background and Justification

To be completed.

PROJECT TITLE

E4 Harmonization of Policy in Lake Victoria Sub-Region

Background and Justification

Lake Victoria is the second largest inland freshwater body in the world. The lake is subject to large variations in water levels and is stated to be ecologically unstable. Phosphorous pollution has been identified as a growing problem, and many large areas of the lake are severely infested with water hyacinth. There are many signs of growing environmental degradation, and water levels seem to be receding. Pollutants that have been identified as entering the lake include industrial wastes, untreated sewage, agricultural runoff, and other diffuse sources.

The bordering countries around Lake Victoria include Kenya, Tanzania and Uganda, with Burundi and Rwanda being included in the catchment area. The population density in the catchment area is above average for Africa, and the rate of population growth is high. There is a high potential for economic growth in the area, but this potential is being jeopardized by environmental degradation. In addition, Lake Victoria is the largest reservoir on the White Nile which assists in securing water supplies for both Sudan and Egypt.

There are numerous people, and significant portions of the economies of several countries dependent on Lake Victoria. If pollution or environmental degradation ever reaches proportions that could threaten the rich bio-diversity of the lake and cause irreversible damage to a lake which is a source of economic activity, the livelihood and recreation for millions of people then not only would severe environmental damage take place, but severe negative socio-economic impacts would also occur.

Now is the time to protect the lake and ensure the ecological restoration and preservation of its ecological balance and water supply capability.

Objectives

(a) To achieve an agreement amongst the riparian countries to "protect and sustain Lake Victoria" and to participate in studies of the lake ecosystem which will eventually lead towards environmental Protection and enhancement policies and legislation.

(b) To study the ecosystem of the lake basin, and outline a program of watershed management for the sustainability and conservation of the lake, in relation with Project A4 "Water balance of the lake".

(c) To prepare environmental management policies and draft binding legislation that would include elimination/reduction of pollution, biological lake restoration,

stabilization/maintenance of lake levels, and future watershed management.

(d) To prepare a work plan for lake watershed control, conservation of the lake, and integrated development of the socio-economic land and water resources of the lake basin.

(e) To develop a program for environmental monitoring to ensure that environmental management policies and legislation are being adhered to and that the lake is achieving biological restoration and sustainability.

(f) To develop a national training program in watershed management and integrated development planning.

Outputs

1. A signed agreement by the riparian countries to jointly cooperate and manage the improvement, restoration and development of Lake Victoria.

2. An assessment of socio-economic and environmental conditions of Lake Victoria.

3. A detailed program of watershed control.

4. Development of environmental management policies and legislation.

5. A draft plan of integrated development of socio-economic, land and water resources in the lake watershed.

6. A detailed work plan outlining follow-up activities for the implementation of integrated development in the lake basin.

7. A project document requesting international assistance for the work plan outlined in item 6.

Activities

1. Develop an agreement by the riparian countries to manage, control and sustain Lake Victoria. The agreement should include the participation of a Council of Ministers, a Management Committee and a Technical Advisory Committee with each country adequately represented.

2. Review and integrate activities involved in Project E1. Prepare terms of reference for an initial socio-economic and environmental assessment of Lake Victoria. Ensure as a minimum that the following items are included in the terms of reference.

   Describe socio-economic activities in the lake basin and dependency of

economic activities on the healthy capability of the lake.

Investigate, define and describe sources of pollution entering the lake and the effect of these pollutants on biological processes in the lake.

Provide solutions for eliminating/reducing pollution and outline mitigative measures to restore and enhance the biological and ecological systems in the lake. This could involve sewage treatment facilities, industrial waste facilities, buffer zones, erosion and sediment control, or other works.

Investigate, delineate, document, and analyze water supplies and water uses that affect the lake. Determine the causes for severe fluctuations in the lake levels and reasons for what presently appears to be diminishing levels.

Provide recommendations on how water levels may be stabilized in the future.

Based on the study findings, provide recommendations for development of environmental policies and legislation to sustain Lake Victoria. Provide recommendations outlining the components required to develop a detailed program of watershed development.

3. Request international assistance to carry out the studies outlined in item 2.

4. Commission an international consultant to carry out the studies listed in item 2.

5. Riparian countries draft policies and legislation for environmental management of Lake Victoria. Develop institutional arrangements for the management and protection of Lake Victoria.

6. Riparian countries draft a plan for integrated development of socio-economic, land and water resources development in the lake basin. All countries provide ministerial approval and commitment.

7. Develop terms of reference for a detailed work plan outlining the activities required for the implementation of an integrated, environmentally sound development program in the Lake Victoria basin that will adhere to the new policies legislation. Dependent on study recommendations, this program could include the development of waste treatment facilities, changes in agricultural practices, buffer zones, erosion and sediment control, development of institutions for management protection and operation of lake facilities, and others as prescribed in these studies.

8. Develop a project document that requests international assistance for the work plan.

9. Implement the work plan.

10. Develop national training programs in watershed management and integrated development planning.

Inputs

Professionals (National, Regional and International)

- Water Resources Planning Specialists
- Water Quality Specialists
- Biological Specialists
- Lake Biologists
- Hydrological Specialists
- Lake and River Morphologists
- Water Resources Computer Modelling Specialist
- Legal and Institutional Specialists
- Social-anthropologists
- Economists
- HRD and Training Specialists

National Governments

- Ministerial Commitment
- Management and Technical Specialists
- Counterparts
- Trainees
- Logistical Support

TECCONILE

- Coordination
- Management Services

Equipment and Material

- Office Space, Office Equipment and Furniture Within Each Country
- Computers and Peripheral Equipment
- Communication and Transportation Equipment
- Others as the Study Progresses

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the governments. TECCONILE, as an executing agency, will subcontract the project components and will manage the

subcontracts. The governments will provide all the necessary assistance

such as data and information, and will assign counterpart staff to follow up the project activities. The project will be implemented in several phases.

Project phases will include the following:

Phase 1 - Development of an agreement-in-principle amongst the riparian countries. Implementation of the initial socio-economic and environmental assessment of Lake Victoria. Allow twenty-four months for completion of this phase.

Phase 2 - Draft policies and legislation for environmental management of Lake Victoria and draft a plan for integrated development. Allow twelve months for completion of this phase.

Phase 3 - Develop a detailed work plan for implementation of recommended work or institutions for development within the lake basin, obtain international funding. Implement the program. Allow sixty months for Phase 3.

A training program will be initiated in Phase 1 and will continue until Phase 3 is completed.

Budget

Allow $50,000 US to develop an agreement amongst the riparian countries and terms of reference for the initial assessment study in Phase 1. This program should be carried out in close conjunction with Projects A4 and E1. In fact, it is recommended that these three projects be combined. As well, some objectives and activities defined herein are closely related to those defined for Project D-5. At the time of finalization of T.O.R.'s a reconciliation of these overlaps will be attempted. Considering that this project will be combined in conjunction with A4, E1 and D5; then provide the following allowances.

<u>International Consultants</u>	
25 person months at $20,000 (Activities - Item 2.)	$ 500,000
<u>National Consultants</u>	
20 person months at $5,000 (inclusive)	100,000
<u>TECCONILE</u>	
20 person months at $5,000 (inclusive)	100,000

National Governments

20 person months at $5,000 (inclusive)		100,000
Training		200,000
Travel		100,000
	Total	$1,100,000
	Contingencies 15%	165,000
	Total Estimated Budget US$	**$1,265,000**
	Say	**$1,300,000**

PROJECT TITLE

E5 Environmental management and development of sub-basins in the Nile River Basin

Background and Justification

International arrangements for the management of the Nile River are of increasing concern. The concerns are related to growing population pressures, limited water resources to be shared and water pollution issues.

In order for a sound environmental management and development approach to be taken for the entire Nile River basin, it is necessary for each country to cooperate and participate in developing environmental management plans in each sub-basin within each country. Environmental management and enhancement concerns should be defined in each basin and directed towards development of environmental policies and legislation for the sub-basins and the entire Nile River basin. These policies and regulations will then lead to environmentally enhanced watershed management plans for each sub-basin. Combining the results of these studies will eventually lead to a river basin plan for the entire Nile River basin based on an environmentally sound approach.

Objectives

On a sub-basin basis:

(a) identify sources and assess levels of pollution;

(b) analyze river and lake processes including the consequences of pollution;

(c) provide preliminary recommendations on pollution control/reduction;

(d) review, harmonize and develop national policies and regulations for pollution control;

(e) develop a format for a standard integrated approach to watershed management in a typical sub-basin;

(f) achieve an agreement amongst the riparian countries for the development of a standard plan and approach for "Environmental Management and Development of Sub-basins in the Nile River Basin.";

(g) incorporate environmental management plans with national water master plans;

(h) establish a basin priority list to select a basin that should be studied at an early stage;

(i) set up a monitoring and evaluation system to ensure that each country is adhering to the regulations, approach and quality of work; and

(j) assist countries in developing environmental management plans for their most critical sub-basins.

Outputs

1. Development of a standardized approach and work plan for environmental management and development of watershed and sub-basins in the Nile River basin.

2. A signed agreement by the riparian countries to jointly cooperate and manage the environmental restoration and enhancement of sub-basins.

3. A priorized list of sub-basins needing immediate attention.

For each sub-basin:

4. An assessment of socio-economic and environmental conditions.

5. A detailed program for watershed control.

6. Development of environmental management policies, regulations and legislation.

7. A draft plan for integrated development of socio-economic, land and water resources.

8. Agreement by riparian countries.

9. A detailed work plan outlining follow up activities for the implementation of integrated development in the sub-basin.

10. A project document requesting international assistance for the work plan.

11. A national training program in watershed management and integrated development planning.

Activities

1. Implement an agreement by the riparian countries to develop a standardized approach and work plan for "Environmental Management

and Development of Watershed Sub-basins in the Nile River Basin." The agreement should include the participation of a Council of Ministers, a Management Committee and a Technical Advisory Committee with each country adequately represented.

2. Prepare terms of reference for an initial socio-economic and environmental assessment of a typical sub-basin. Ensure, as a minimum, that the following items are included in the terms of reference:

   Describe human, water, soil, vegetation, wildlife, waterfowl, aquatic, agricultural, and mineral resources within the sub-basin and prevailing climatic conditions.

   Describe socio-economic activities in the sub-basin and dependency of economic activities on a healthy environment in the sub-basin

   Investigate, define and describe sources of pollution entering water systems (lakes, rivers and streams) and the effect of these pollutants on biological processes in the water systems. Include as a *minimum*:

   - river regime processes such as land erosion, sediment transportation and sediment deposits;
   - industrial wastes;
   - untreated sewage;
   - urban runoff;
   - agricultural runoff; and
   - other phenomena as delineated in the studies.

   Provide solutions for elimination or reduction of pollutants and outline mitigative measures to restore and enhance the biological and ecological systems in the sub-basin.

   In accordance with the development of National Water Master Plans, investigate, delineate, document, and analyze water supplies and water uses that affect the sub-basin. Outline water surpluses and water deficits over a lengthy period of record.

   Provide recommendations on water resources developments needed to ensure secure water supplies.

Provide initial assessments of social and environmental impact assessments for any proposed developments.

Based on the study findings, provide recommendations for development of environmental policies and legislation to sustain and enhance the environment within the sub-basin.

Provide recommendations outlining the components required to develop a detailed program of watershed development in the sub-basin including wetland encroachment and impact on water resources and the need for an integrated approach to watershed management.

3. Request international assistance to carry out the studies outlined in item 2.

4. Commission an international consultant to carry out the studies. Consideration should be given to the involvement of international consultants for initial sub-basin studies for the following reasons:

   Sub-basins should be selected that are most critical to the overall Nile River basin and should involve more than one country (i.e., Lake Victoria).

   Objective approach.

   Transfer of technology and training for national government personnel to carry out studies in their own sub-basin at a later date.

   Better potential for international funding when more than one country is involved and an objective international consultant is selected.

5. Riparian countries draft policies and legislation for environmental management of the sub-basin.

6. Riparian countries draft a plan for integrated development of socio-economic, land and water resources development in the sub-basin. All countries provide ministerial approval and commitment.

7. Develop terms of reference for a detailed work plan outlining the activities required for the implementation of an integrated, environmentally sound development program in the sub-basin.

8. Develop a project document that requests international assistance for the work plan.

9. Implement the work plan.

10. Develop national training programs in watershed management and integrated development planning.

Inputs

Professionals (National, Regional and International)

- Water Resources Planning Specialists
- Environmental Planning Specialists
- Water Quality Specialists
- Biological Specialists
- Lake Biologists
- Hydrological Specialists
- Lake and River Morphologists
- River Regime Specialists
- Water Resources Computer Modelling Specialists
- Social-anthropologists
- Economists
- HRD and Training Specialists

National Governments

- Ministerial Commitment
- Management and Technical Specialists
- Counterparts
- Trainees
- Logistical Support

TECCONILE

- Coordination
- Management Services

Equipment and Material

- Office Space, Office Equipment and Furniture Within Each Country
- Computers and Printers
- Communication and Transportation Equipment
- Others as the Study Progresses.

Institutional arrangements and implementation strategy

The project will be executed by TECCONILE on behalf of the governments. TECCONILE, as an executing agency, will subcontract the project components and will manage the subcontracts. The governments will provide all the necessary assistance such as data and information, and will assign counterpart staff to follow up the project activities. The project will be implemented in several phases.

Project phases will include the following:

Phase 1 - Development of an agreement-in-principle amongst the riparian countries. Implementation of the initial socio-economic and environmental assessment of a selected sub-basin. Allow twenty-four months for completion of this phase.

Phase 2 - Draft policies and legislation for environmental management of the sub-basin, and draft a plan for integrated development. Allow twelve months for completion of this phase.

Phase 3 - Develop a detailed work plan for implementation of development within the sub-basin, and obtain international funding. Implement the program. Allow sixty months for Phase 3.

A training program will be initiated in Phase 1, and will continue until Phase 3 is completed.

Budget

Allow $50,000 US to develop terms of reference for the initial assessment study in Phase 1 for the first sub-basin selected for this study. All other budgets should be developed based on findings of investigations in Phase 1 and the requirement of follow-up work. Some of the objectives and activities defined for this project coincide with those defined for project D-5. At the time of finalizing T.O.R.'s reconciliation of overlaps will be made. As well, these sub-basin studies are to be coordinated closely with Projects A1 (Water Supply and Uses) and A2 (National Water Master Plan) and in many cases should be combined with these projects to provide an overall basin planning approach.

However, for the purpose of budget allowance, it is assumed that five major sub-basins will be studied as outlined above. For each sub-basin, provide the following allowances.

Estimated Budget

International Consultants	
120 person months at $20,000 (inclusive)	$ 2,400,000
National Consultants	
120 person months at $5,000 (inclusive)	600,000
TECCONILE	
3 person months at $5,000 (inclusive)	15,000
Governments	
40 person months at $5,000 (inclusive)	200,000
Equipment and Materials allow	100,000
Travel allow	100,000
Training allow	200,000
Total	3,615,000
Contingencies 15%	542,250
For Each Sub-basin Total Estimated Budget US$	**4,157,250**
Say	**4,200,000**
Say for Five Sub-basins	**$21,000,000**

ANNEX 7

PROJECT COMBINATIONS AND RECONFIGURATION

Annex 5 provided titles and description for the original 34 projects recorded at the June 1994 workshop. These projects included the following:

A1 to A6 inclusive	(6 Projects)
B1 to B6 inclusive	(6 Projects)
C1 and C2	(2 Projects)
D1 to D6 inclusive	(6 Projects)
TOTAL	34 Projects

The 34 projects were combined into 22 projects as follows:

A. INTEGRATED WATER RESOURCES PLANNING AND MANAGEMENT

A1 Improved Water Management Procedures
Becomes B3 in Capacity Building

A2 Initiate Basin-wide Information Systems
Becomes B6 in Capacity Building

A3 Becomes A1)
)
A4 Becomes A2)
) Integrated Water Resources
A5 Becomes A3)
)
A6 Becomes A4)

B. CAPACITY BUILDING

The following projects were added to Capacity Building:

A1 and A2 from integrated Water Resources becomes B3 and B6 respectively.

E1 from Environment becomes B5

B1 Remains unchanged but integrates this preparatory assistance for TECCONILE

B2 Water Resources Atlas remains unchanged

A1 Becomes B3

B3 Becomes B4

E1 Becomes B5

A2 Becomes B6