

**GLOBAL
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15541 - AFR

Kenya, Tanzania, Uganda
Lake Victoria Environmental Management Project

Project Document
June 1996



THE WORLD BANK

GEF Documentation

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KENYA, TANZANIA, UGANDA

Lake Victoria

Environmental Management Project

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Agriculture and Environment Operations Division
Eastern Africa Department
Africa Region

CURRENCY EQUIVALENTS

Currency Unit = Kenya (KSh), Tanzania (TSh), and Uganda Shillings (Ush)
US\$1 = KSh58 (June 1996); US\$1 = TSh615 (June 1996); US\$1 = USh1,000 (June 1996)
SDR1.0 = US\$1.44424

WEIGHTS AND MEASURES

Metric System

GOVERNMENT FISCAL YEAR

July 1- June 30

ACRONYMS

ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
CBO	Community-Based Organization
CIFA	FAO Committee for Inland Fisheries of Africa
EAFFRO	East African Freshwater Fisheries Research Organisation
EU	European Union
FAO	Food and Agriculture Organisation (of the United Nations)
FIRI	Fisheries Research Institute (Uganda)
FY	Fiscal Year
GDP	Gross Domestic Product
GEF	Global Environment Facility
IAPSO	Inter-Agency Procurement Services Office
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICR	Implementation Completion Report
IDA	International Development Association
IPM	Integrated Pest Management
ISP	International Shopping Procedures
IMF	International Monetary Fund
IUCN	International Union for Conservation (World Conservation Union)
KEMFRI	Kenya Marine Fisheries Research Institute
LVEMP	Lake Victoria Environmental Management Project
LVFO	Lake Victoria Fisheries Organization
MISO	Management Information Systems Officer
MTR	Mid-Term Review
NCB	National Competitive Bidding
NEAP	National Environmental Action Plan
NEMA	National Environmental Management Authority (Uganda)
NGO	Non-Governmental Organization
NSP	National Shopping Procedures
NWSC	National Water and Sewerage Corporation (Uganda)
OPO	Operations Officer
PDO	Procurement/Disbursement Officer
PIC	Project Implementation Committee
PIP	Project Implementation Plan
RPSC	Regional Policy and Steering Committee
SAP	Strategic Action Plan
SIDA	Swedish International Development Agency
SOE	Statement of Expenditure
TAFIRI	Tanzania Fisheries Research Institute
TECCONILE	Technical Cooperation for the Promotion of Dev't. and Env. Protection of the Nile Basin
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WMO	World Meteorological Organisation

PART I: PROJECT SUMMARY

**KENYA, TANZANIA, AND UGANDA
LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT**

GRANT, CREDIT, AND PROJECT SUMMARY

Borrowers: The Republic of Kenya, United Republic of Tanzania, and the Republic of Uganda

Beneficiaries: Fisherfolk, smallholder farmers

Amounts: (a) GEF Kenya SDR8.0 million (US\$11.5 million equivalent)
Tanzania SDR7.2 million (US\$10.3 million equivalent)
Uganda SDR9.2 million (US\$13.2 million equivalent)

(b) IDA Kenya SDR8.9 million (US\$12.8 million equivalent)
Tanzania SDR7.0 million (US\$10.1 million equivalent)
Uganda SDR8.4 million (US\$12.1 million equivalent)

Terms (GEF): Grant

Terms (IDA): Standard, with 40 years maturity.

Commitment Charge (IDA): Standard

Onlending Terms: Grants to communities for microprojects

Financing Plan (US\$ m):

	GEF	IDA	Governments	Totals
Local	15.9	18.4	7.6	41.9
Foreign	19.1	16.6	0.0	35.7
Total	35.0	35.0	7.6	77.6

Economic Rate of Return: No ERR calculated, as project benefits are not readily quantifiable. The major direct economic benefit for which the project lays the foundation is avoidance of collapse of the lake fisheries, which is estimated to have a present value of US\$270-520 million to the lake community.

Staff Appraisal Report: Report No. 15429

Map No.: IBRD 27780

Project ID No.: F2-PA-44135

Vice President:	Callisto Madavo, AFR
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Staff:	Graeme Donovan, AF2AE

KENYA, TANZANIA, UGANDA

THE LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT

PART I: Grant and Project Summary

1. The Chief Executive Officer of the GEF has endorsed the GEF financed portion of the project pursuant to paragraph 30 of the Instrument for the Establishment of the Restructured Global Environment Facility.

Country and Sector Background

Kenya

2. Kenya remains a low-income country. Even though its population growth rate, which historically has been very high, dropped to about 3 percent in 1993, and although Kenya is one of the few countries in Africa that experienced a decline in fertility in the eighties, a significant and sustained increase in per capita income has proved to be an elusive goal in Kenya during the past decade. In spite of a few years of relatively good growth during the second half of the 1980s, the performance of the economy has been particularly inadequate in generating new jobs, and there has been no significant improvement in the incidence of poverty. Overall, the economy has generated only marginal increases in per capita output over the past decade; during the recent years, per capita income actually declined - from \$340 in 1991 to \$260 in 1994 (at current prices and exchange rates).

3. Sustained Government effort since mid-1993 to tighten fiscal and monetary policy has resulted in effective economic stabilization and the revival of economic growth. The fiscal deficit (exclusive of grants) has been sharply reduced over two years from over 11 percent of GDP in FY93 to about 2.5 percent in FY95. Combined with a generally tight monetary stance, these policies have resulted in the reduction of inflation, to a three-month annualized inflation rate of 2.8 percent by the third quarter of 1995. The recent decline in domestic interest rates and the subsequent capital outflow, as well as the gradual recovery of import demand, resulted in the shilling depreciating in the second quarter of 1995 to about KSh 55 per US dollar where it has since stabilized. In parallel with the improvement in inflation has been a resumption of real economic growth. GDP growth (at factor cost) for 1994 is estimated at 3 percent, the first significantly positive growth in three years, and it was projected at around 5 percent for 1995.

4. Rising population pressures, migration and rapid urbanization have increased the need for urgent actions to address Kenya's environmental problems. The more critical problems are related to soil and land degradation, water resource management, biomass and household energy issues, and the protection and management of fragile ecosystems, including national parks. Rapid urbanization and inadequate physical planning have also caused a significant deterioration in the urban environment. The Government adopted a comprehensive National Environmental Action Plan (NEAP) in June 1994. Areas for priority action include the development and adoption of a comprehensive environmental policy, the establishment of an effective institutional and legal framework, and the formalizing of a requirement for environmental impact assessments for all development projects.

Tanzania

5. By the early 1980s, Tanzania had come to be a heavily state-controlled economy, whose rigid economic system was battered by numerous shocks, and whose inadequate policies led to economic stagnation and a fall in per capita income lasting almost a decade. Beginning in 1986, the Government embarked on a program to reform and fundamentally change the existing approach to economic development by dismantling the system of pervasive economic controls and encouraging more active participation of the private sector in the economy. Structural reforms, particularly relating to traditional exports and the parastatal and financial sectors, were not fully completed, and macroeconomic stabilization remained elusive. Nevertheless, the economy responded well to the reforms that were implemented (notably, liberalization of food crop marketing and progressive improvements in foreign exchange management) and the accompanying increased availability of external resources. Official estimates indicate that GDP growth averaged about 4 percent per year and exports grew by more than 4 percent per year during 1986-94 (versus a 5 percent p.a. decline during 1979-85), with a marked increase in food production, increased sales of traditional exports, and a doubling in non-traditional agricultural exports since 1985. Recent household surveys have shown that the adjustment program has been successful in reducing the incidence of poverty from about 65 percent of the rural population in the early 1980s to about 50 percent in the early 1990s.

6. Progress has been made in reforming the foreign exchange and trade systems over the last two years. Tanzania has moved to an interbank market and has abolished all export retention and import licensing, except for items related to health and national security. Excessive monetary expansion has been fueled by worsening fiscal management. The fiscal deficit (including grants) was about 6 percent of GDP in FY93 and 5 percent in FY94, after broadly balanced positions in the previous four years. This reflected widespread and increasing customs duty exemptions, an increasingly inefficient tax administration and the failure of the expenditure control system. Efforts are being made in the current fiscal year (among them a public sector hiring freeze, and reduced transfers to parastatals) to reduce the fiscal deficit below 4 percent of GDP. Inflation, which had accelerated above 25 percent p.a. is targeted by efforts to bring it down to 22 percent within the next fiscal year. Real GDP growth averaged about 3-4 percent per year during FY92 to FY94. Growth in FY94 was seriously compromised by weak economic management, and severe power shortages caused largely by less-than-average rainfall. These developments limited the scope for generating employment and, in particular, the high inflation rates resulting from macroeconomic mismanagement continue to erode the real incomes of the poor.

7. The recently completed National Environmental Action Plan focused on the need for action in the key areas of land degradation, water supply, environmental pollution, marine and freshwater resource management, habitat conservation and bio-diversity, and deforestation. The action program for implementation includes revision of the legislative framework to enable local participation in environmental management more fully. Policies will support the environment in various ways, including applying the forest and wildlife protection acts; developing the means for assessing environmental quality, including water and air pollution; and strengthening environmental awareness programs. Some Government policies are oriented towards using incentives, such as implementing the new land policy to enhance the security of tenure; pricing policies for fuel, including oil; and water rights to encourage efficient use and environmentally sensitive practices.

Uganda

8. With a per capita income of about US\$200, Uganda is one of the poorest countries in the world. Its weak economy and poor social indicators are the legacy of nearly 15 years of political turmoil and economic decline. Since 1987 the Government has been implementing an economic reform program supported by a large number of donors. The program aims to promote prudent fiscal and monetary management, improve incentives to the private sector, reform the regulatory framework, and develop human capital through investment in education, health and other social services. Economic recovery and stabilization have been successful; hard-won macroeconomic stability has been maintained for the past three years. The stability is precarious, however; continuation of good policies and further improvement are therefore required. The dilemma facing policymakers, is to get the economy moving ahead more rapidly, without generating inflation which could unravel the entire adjustment program.

9. Uganda's economic growth since 1987 has been good, but not spectacular. Real GDP grew by an average of 5.4 percent per annum from FY87 to FY93, a gain of about 2.5 percent per annum in per capita terms. To a large extent this growth was the result of bringing land and capital back into production, made possible by increased peace and security. More recently growth has also been fueled by some private investment and by the impact of trade, exchange rate and crop marketing liberalization. Preliminary indications are that real GDP rose by 5 percent in FY94, mainly due to strong performance by the manufacturing and construction sectors. The point has now been reached where further growth will depend on increased private investment.

10. The NEAP was approved by the Government in January 1994. The National Environmental Policy that was adopted subsequently calls for re-aligning sectoral development strategies so that they address priority environmental concerns relating to, among others, land degradation, deforestation, loss of wetlands, and dwindling fish stocks, several of which are directly related to environmental management of the Lake Victoria basin. The policy also emphasizes strategies cutting across sectors such as the need to control population growth and enhance security of land tenure. It also advocates environmental education and a system of environmental impact assessments as essential means of promoting rational resource use. The National Environmental Management Authority (NEMA) established recently will serve as the central policy advisory body on the environment, and coordinate implementation of the NEAP.

Lake Victoria and its Surrounds

11. Lake Victoria (Map Number IBRD 27780), with a surface area of 68,800 km² and an adjoining catchment of 184,000 km², is the world's second largest body of fresh water (second only to Lake Superior in size), and the largest in the developing world. Lake Victoria touches the Equator in its northern reaches, and is relatively shallow, reaching a maximum depth of about 80 m, and an average depth of about 40 m. The lake's shoreline is long (about 3,500 km) and convoluted, enclosing innumerable small, shallow bays and inlets, many of which include swamps and wetlands which differ a great deal from one another and from the lake itself.

12. Although there are many features of Lake Victoria which are of intense interest to biologists, it is fish that receive the most attention. Most of the fish species now in the lake also lived in the preceding, west-flowing rivers, but the *cichlids*, in particular, had a remarkable burst of speciation in response to the change from river to lake conditions.

Similar things happened in the other great lakes, but in Lake Victoria it happened much more recently, more rapidly, and with, at first sight, fewer opportunities for ecological isolation in different types of habitat. The cichlids are capable of rapid genetic change, and more prone to speciation than other groups of African fish.

13. Kenya, Tanzania and Uganda control 6, 49, and 45 percent of the lake surface, respectively. The gross economic product of the lake catchment is in the order of US\$3-4 billion annually, and supports an estimated population of 25 million people at incomes in the range of US\$90-270 per capita p.a. The lake catchment thus provides for the livelihood of about one third of the combined populations of the three countries, and about the same proportion of the combined gross domestic product. With the exception of Kampala, the capital of Uganda, the lake catchment economy is principally an agricultural one, with a number of cash crops (including exports of fish) and a high level of subsistence fishing and agriculture. In Kenya and Uganda the areas of coffee and tea in the catchment are a significant part of those nations' major agricultural exports. The quality of the physical environment is therefore a fundamental factor in maintaining and increasing the living standards of the growing population.

Major Threats to the Lake

14. The lake basin is used as a source of food, energy, drinking and irrigation water, shelter, transport, and as a repository for human, agricultural and industrial waste. With the populations of the riparian communities growing at rates among the highest in the world, the multiple activities in the lake basin have increasingly come into conflict. This has contributed to rendering the lake environmentally unstable. The lake ecosystem has undergone substantial, and to some observers alarming changes, which have accelerated over the last three decades. Massive blooms of algae have developed, and come increasingly to be dominated by the potentially toxic blue-green variety. Water-borne diseases have increased in frequency. Water hyacinth, absent as late as 1989, has begun to choke important waterways and landings, especially in Uganda. Overfishing and oxygen depletion at lower depths of the lake threaten the artisanal fisheries and biodiversity (over 200 indigenous species are said to be facing possible extinction). Scientists advance two main hypotheses for these extensive changes. First, the introduction of Nile perch as an exotic species some 30 years ago has altered the food web structure; second, nutrient inputs from adjoining catchments are causing eutrophication. Thus although the lake and its fishery show the evidence of the dramatic changes in the lake basin over the past century, the lake is not the source of the problem. The problems have arisen in the surrounding basins through human activity.

Project Objectives

15. The Lake Victoria Environmental Management Project (LVEMP) is a comprehensive program aimed at rehabilitation of the lake ecosystem for the benefit of the people who live in the catchment, the national economies of which they are a part, and the global community. The program objectives are to: (a) maximize the sustainable benefits to riparian communities from using resources within the basin to generate food, employment and income, supply safe water, and sustain a disease free environment; and (b) conserve biodiversity and genetic resources for the benefit of the riparian communities and the global community. In order to address the tradeoffs among these objectives which cut across national boundaries, a further project objective is to harmonize national management programs in order to achieve, to the maximum extent possible, the reversal of increasing environmental degradation.

Project Description

16. The project is the first phase of a longer term program whose aims are as outlined above. The first phase will provide the necessary information to improve management of the lake ecosystem, establish mechanisms for cooperative management by the three countries, identify and demonstrate practical, self-sustaining remedies, while simultaneously building capacity for ecosystem management. The project will consist of two broad sets of activities. The first set, designed to address specific environmental threats, will take place in a series of selected *pilot zones*. The second set of activities, which will improve information on the lake and build capacity for more effective management, will be of necessity *lake-wide* in scope.

17. In the *pilot zones*, the project would do the following in an integrated way: develop groundwater resources; conserve and develop wetlands; reduce sediment and nutrient flow, especially of phosphorus, into the lake; reduce fecal coliform and municipal nutrient output into the lake; regulate industrial effluent; define current contamination of fish and prevent any increase; stabilize the catch of Nile Perch, and increase the catch of indigenous species; increase incomes of local fisherfolk; and reduce water hyacinth to manageable levels. A total of fourteen pilot zones have been identified, four in Kenya, and five in each of Tanzania and Uganda. Work would be started in one pilot zone in each country in the first year - Nyakach Bay in Kenya (including the city of Kisumu), Mwanza Gulf in Tanzania (including the city of Mwanza), and Napoleon Bay in Uganda (including the city of Jinja). The other pilot zones are Berkeley Bay, Usenge-Yala, and Karungu Bay (Kenya); Mara-Shirati Bay, Speke Gulf, Emin Pasha Gulf, and Kagera-Rubafu Bay (Tanzania); and MacDonald-Berkeley Bay, Murchison Bay, Sesse Islands, and Sango Bay (Uganda).

18. Among *lake-wide* actions the project would: assess and measure sources of nutrients causing eutrophication; measure fisheries-trophic state interactions; model and monitor lake circulation; define and measure the contaminant threat; harmonize regulation and legislation; monitor recovery and impact; and build institutional capacity.

19. The project would support the following specific regional and national program activities: (a) management of fisheries, including the establishment and operations of the Lake Victoria Fisheries Organisation [US\$2.3 million], improvement of fisheries research and the information base for fisheries [US\$13.3 million], strengthening of extension, monitoring and enforcement capabilities of national fisheries administrations [US\$14.1 million]; and studying and implementing a Fish Levy Trust [US\$2.0 million]; (b) management and control of the water hyacinth infestation [US\$8.3 million]; (c) management of lake pollution and water quality, including strengthening and harmonizing national regulatory and incentive frameworks and enforcement capabilities, and establishing a lake-wide water quality monitoring system [US\$9.6 million], improvement of research and the information base for pollution control and water quality [US\$4.3 million], pilot investments in industrial and municipal waste management [US\$1.7 million], and priority waste management investments [US\$4 million]; (d) management of land use in the catchment, including improvement of research and the information base for pollution loading from the catchment, assessment of agro-chemicals, and pilot investments in soil conservation and afforestation [US\$9.2 million]; (e) wetland management, including improving the information base [US\$3.4 million], and pilot investments in sustainable management of wetland products [US\$1.5 million]; and (f) support for institutions for lake-wide research and management, and pollution disaster contingency planning [US\$4.0 million].

20. Incremental costs of the project are estimated to be US\$38.8 million (details in the SAR Annex 7). In addition to financing the baseline and adjusted baseline measures from non-GEF (IDA) sources, the three riparian governments have agreed to contribute US\$3.8 million from their own resources to finance a part of the project's incremental cost. They have requested a GEF grant of US\$35 million to fund the balance.

21. The total project cost of US\$77.6 million would be financed by the Global Environment Facility (GEF) (US\$35 million), IDA (US\$35 million), and the Governments of Kenya, Tanzania, and Uganda (US\$7.6 million among them). Estimated project costs and financing are given in Schedule A. Schedule B outlines the economic analysis, Schedule C the procurement methods and disbursement estimates, Schedule D the timetable of key project processing events, Schedule E the status of Bank Group Operations in the three countries, and Schedule F an overview of the three countries.

Project Implementation

22. The Tripartite Agreement (signed August 5, 1994) which set in motion a collaborative process of project preparation among the three countries, provided also for project implementation. In particular it established three National Secretariats, each headed by a high-level officer, selected by the respective governments, and supported by a modest staff. These Secretariats served an essential coordination role during project preparation, and it is planned that this role should continue into the project implementation phase. They will be strengthened by the appointment of a Procurement/Disbursement Officer, an Operations Officer, and a Management Information Systems Officer. Among other things, these three officers will ensure compliance with IDA and GEF reporting, procurement and disbursement procedures. The three Secretariats, one in each country, will provide a day-to-day central contact point and information clearing house for all agencies implementing the program, and all donors supporting it. While the many implementing agencies will be responsible for progress on their own components, and for monitoring and reporting on that progress, the Secretariats will gather information from all the agencies in their respective countries, be responsible for overall monitoring, and prepare progress reports for decision making about the overall project. The Heads of the Secretariats will also, when necessary, organize tripartite meetings of officials responsible for various components of the program. The Regional Secretariat in Tanzania will organize meetings, when required, of members of the Regional Policy and Steering Committee, which will also remain in place, with the same membership as it has had throughout project preparation. The Committee will have several roles, its most important being the mechanism for resolution of disputes arising during implementation of the program.

23. The Lake Victoria Fisheries Organization will assume overall coordination for components associated with fisheries, although as the project description outlines, implementation will be by individual national agencies, and the Regional Policy and Steering Committee will be responsible for overall program coordination, including coordination between the fisheries program as a whole and the rest of the program.

24. The various national agencies will implement components of the projects as follows. The three Fisheries Research Institutes (KEMFRI, TAFIRI and FIRI) will play lead roles in all sub-components of fisheries research, and will collaborate with the Fisheries Departments of their respective governments in the fisheries extension, and with the Ministries of Water in the Water Quality components. For the latter components, the Ministries of Water will be the lead agencies, and they in turn will collaborate closely

with the Ministries of Environment, Natural Resources and Agriculture in their implementation of the components on land use and wetland management. National wetlands committees in all three countries will also be involved in these components, with continuing assistance from the World Conservation Union (IUCN). The Moi, Makerere, and Sokoine Universities, and the Universities of Nairobi and Dar es Salaam, will be involved in many of the studies, including those on socio-economics. The water testing laboratories of the Kisumu and Mwanza Municipal Councils, the Uganda Water and Sewage Corporation, and the Lake Basin Development Authority (in Kisumu) will extend the reach of laboratories already operating or planned by the respective Ministries of Water.

25. In order to address the variations in implementation capacity, from country to country, and agency to agency, with some strong already but others less so, every sub-program makes extensive provision for capacity building. For the whole project in the three countries provision is made for more than 2,000 short term and on-job training courses, about 100 regional Masters Degrees, and 15 PhDs. Care will be taken to strike a balance in the training and its timing so that enough people are available to implement the project.

26. For the Water Hyacinth Control Program, national steering committees or task forces will be set up, and rearing units for biological control agents will be assisted by the respective national agricultural research institutes. Finally, the project will also draw on the resources of local and international consultants in areas where particular scientific expertise is called for beyond the abilities of staff in the implementing Ministries.

27. Because of the extensive scientific investments in the program, the worldwide scientific interest in Lake Victoria, the need to seek innovative solutions to solving environmental problems that draw on a broad spectrum of physical, biological and social sciences, and uncertainties associated with the dynamic lake ecosystem, it is also proposed to appoint a high level panel of internationally renowned scientists, initially with 7 members, to serve as an overall advisory group for the scientific studies in the lake. Possible scientific specialties for representation on the panel will be limnology, fish biology, zoology, entomology, plant physiology, microbiology, chemistry, meteorology, economics, anthropology, sociology, soil chemistry and physics, forestry, and ecology. The panel will contain at least three members representing the natural sciences and at least two from the social sciences, and its membership will be reviewed every two years, although members may serve unlimited terms upon reappointment by the nominating agencies. Following each two-yearly review, the panel will elect from among its members a corresponding secretary to facilitate communication within the panel. The panel members will be mutually acceptable to the three riparian states (as represented by the Regional Policy and Steering Committee) and to IDA.

28. As they collaborated during project preparation, IDA, UNDP, and UNEP will also collaborate during reviews of implementation. IDA will have overall responsibility for review, UNDP will focus on stakeholder consultation and participation aspects of the project, and UNEP will focus on water quality aspects of the project. As part of the Mid-Term Review of the project, the three governments will prepare an updated analysis of transboundary environmental concerns, to guide the second phase of project implementation, and set the stage for subsequent initiatives. The Implementation Completion Report prepared by the three governments at the end of the project will include a revised Strategic Action Program, containing an outline of interventions needed

to address priority problems. IDA will use this as the basis for convening a donors' meeting to seek commitments to support such interventions.

Project Sustainability

29. The two most important elements of sustainability are stakeholder ownership, and provision for fiscal continuance. They have been addressed by a highly participatory mode of project preparation, and will be addressed during implementation by special efforts to involve local communities, and support for a Fisheries Levy Trust study to seek sources of funds for ongoing support for lake ecosystem activities.

30. Catalyzed by GEF financing, the three governments prepared the project themselves, in the process resolving many issues among them, demonstrating good technical collaboration, and generating strong ownership for the implementation phase. The Tripartite Agreement signed in August 1994 covered both preparation and implementation, thus providing for the implementation phase a continuing legal framework which has already been tested and found sound. Institutional arrangements which have proved their worth during preparation - especially the structure of National Secretariats and a joint Policy Steering Committee - will be continued unchanged for implementation, although the Secretariats will be strengthened.

31. Supported by the UNDP, special efforts during preparation were made in all three countries to involve communities around the lake in generation and discussion of project proposals, along with information-gathering to ensure that project proposals address the needs of local communities. In all three countries consultants were engaged who visited communities, women's groups, projects of community-based organisations and NGOs in fisheries and fish processing, soil conservation, wetlands development, and water hyacinth control, among many others. In Tanzania, for example, a study of community needs was conducted in three regions, 12 districts, 24 fishing villages and more than 85 groups or communities. The consultants also worked with NGOs and others to conduct stakeholder workshops, and with the government working groups to incorporate a community focus into the preparation report. The large emphasis on fisheries extension is one of many outcomes of this process. Others include the provision for community micro-projects among the investments which the project supports, and the proposals for community involvement in many of the research programs to be conducted under the project. The government preparation report acknowledges that "one of the major setbacks in aquatic resource management in East Africa is the general lack of community participation in management programs", and notes that such participation "is considered key to the successful implementation of this program."

32. Throughout the project special efforts will be made to involve local communities, and the capacity of a number of local NGOs and CBOs will be strengthened so that they could facilitate the process of community participation and ownership, and lead the communities in undertaking wise use activities of the resources in the lake and its basin. A special feature of the Fish Biology and Biodiversity Conservation program implementation, for example, will be attempts to involve local communities in identification of issues, tagging and recapture efforts, return of immature fish, surveillance of protected areas, sampling of commercial catches, protection of research equipment, and compilation of research data. Many of the other scientific initiatives will involve communities in carrying out the measurements, and in caring for monitoring equipment. For the water hyacinth control program, in particular, it will be essential for local people to understand and assist with the biological control efforts.

33. The project will have community participation woven into virtually every component, funding for micro-projects, a great deal of community training, hundreds of stakeholder workshops, and provision for community participation in everything from scientific studies to water hyacinth control, fisheries research to own-enforcement of agreed fishery regulations, sustainable use of wetlands to soil conservation, with benefits springing from better fishing management, aquaculture, higher quality products, lower post-harvest losses, cleaner water, more control over local fishing beaches, and construction of community assets.

34. Acknowledging that availability of reliable and adequate funding is essential for management of fisheries, which involves continuing research, extension, monitoring and enforcement, the three governments have proposed to study and implement jointly a program in which funds raised from the commercial fisheries themselves will contribute to underwriting fisheries management in the longer term, as well as assisting some of the central monitoring and management initiatives to become fiscally sustainable. The study will identify sources of funds, and also examine in depth the issues involved in managing such funds on a regional basis. The LVEMP includes financial support for establishing a shared Levy Trust Fund among the three countries, should the study show this to be feasible.

Lessons Learned from Previous IDA and GEF Involvement

35. This program will be the first of its kind within the region, addressing a complex set of managerial, scientific/technical and institutional issues across three countries. It aims to provide Governments with the necessary skills, information, technical and financial resources, and a proper institutional and legal framework to carry out successfully such an endeavor. It will build technical capacity to promote, assist and coordinate the various initiatives within a regional framework, and help design a comprehensive set of national policies and strategies based on lessons learned from field experience. An important lesson incorporated from past operations was to ensure that preparation be done by the countries themselves. The resultant ownership will have the usual national benefits, as well as being especially important in this program which crosses national boundaries, since the three governments have already gained valuable experience working together during preparation.

36. The present report has responded to the GEF Technical Review by acknowledging the uncertainty about sources and mechanics of eutrophication, incorporating the specific management elements suggested by the reviewer, setting the stage for a new approach to modelling, reiterating the emphasis already contained in the first draft, that *management* of the lake's problems is the principal aim of the project, and delineating the project's large elements of capacity building.

Rationale for GEF and IDA Involvement

37. Lake Victoria is an international water body that is both of great economic worth to the three riparian countries and of great scientific and cultural significance to the global community, mainly in respect of its unique waterborne biodiversity. It is suffering severely from three of the four major global environment concerns highlighted in the GEF Operational Strategy for International Waters - degradation of water quality due to pollution from land-based activities; introduction of non-indigenous species; and excessive exploitation of living resources. It is also facing their typical consequences - potentially irreversible environmental damage, hardship to the poor and serious health

concerns. With poverty endemic to the region and many competing claims for scarce development resources, the case for GEF-support to overcome the barriers to concerted corrective action is extremely strong. As called for in the operational strategy, the GEF assistance will act as a catalyst for the three countries to develop a better understanding of how the lake functions, learn how the actions of their populations in the lake basin affect the lake environment, and work out ways jointly with one another to implement a comprehensive approach to managing the lake ecosystem to achieve global environment benefits. The project is consistent with both the GEF waterbody-based operational program and with the integrated land and water operational program, while also having elements of the third, contaminant-based, operational program. The project will in particular address another priority in the operational strategy - the conservation and sustainable use of biodiversity in freshwater ecosystems. As one of the world's largest unique freshwater biodiversity habitats, Lake Victoria is a clear priority for GEF assistance.

38. The GEF funding for this project will make possible the elaboration of a strategic framework for a large program of investments in the lake basin during the project implementation period, particularly in municipal waste management and soil conservation, and will also lay the foundation for a longer program of investments over time in these and other areas. It will thus have an enormous "leveraging" impact, for the benefit of the national and global environments. The GEF financing of preparation succeeded in generating strong "ownership" of the project by the three governments which prepared it, and catalysed close collaboration at every stage among IDA, FAO, UNDP and UNEP. The information and pilot work carried out in the GEF project will orient ongoing investments and guide new ones during its five years of implementation, and far beyond. Within the next two years, under projects already begun, IDA and the European Union will finance improvements to municipal sewage treatment schemes in Kampala and Jinja in Uganda, and Mwanza in Tanzania. The funds will also finance a study of storm water drainage, solid waste management, and water reticulation in Kampala.

39. Several other major infrastructure projects are planned to begin implementation in FY98 which will finance water supply and urban sanitation in the lake basin, directly in support of the LVEMP. Further projects are planned to support natural resource management in the lake basin, including soil conservation and catchment afforestation. All of these projects will reduce pollution and eutrophication in the lake. While most of these projects were identified initially in the absence of the LVEMP, the latter will increase markedly the success with which they address the priority issues. The major projects still forthcoming will "take their signals" from the framework and findings of the LVEMP. Numerous smaller scale activities with bilateral support, implemented by local communities and NGOs, will also benefit from being planned in the context of the improved information base and management plans designed for the ecosystem as a whole, which will result from the LVEMP.

40. The project is consistent with the Bank's Country Assistance Strategy (CAS) for each of the three countries. The CAS for Kenya was discussed by the Board on January 31, 1996. One of the key elements of the strategy is to improve environmental management within the country, and to assist Kenya to respond to its commitments to enhance protection of the global environment. The CAS for Uganda was discussed by the Board on June 1, 1995. An important element of that strategy is to build domestic environmental management capacity, and in particular to address issues related to degradation of Lake Victoria. The CAS for Tanzania was discussed by the Board in

March 1994, and a Progress Report was discussed by the Board on May 23, 1996. IDA financial support for the project is in line with two primary aims of the CAS, namely capacity building for improved public sector management, and creating a climate for environmentally sustainable investments.

41. The project will be the first substantial investment in the environment for IDA in two of the three countries following preparation of National Environmental Action Plans in all three. Various other donors have supported a range of initiatives in and around Lake Victoria, in smaller, uncoordinated, and sometimes incomplete ways. In the absence of a coordinated management system for the entire lake and its ecosystem, these smaller projects have sometimes fallen short, and continue to fall short, of realizing their maximum potential. Building on its wide-ranging relationships with all three governments, IDA has an important capability, and as implementing donor in this project an important opportunity, to support the development of such a coordinated management system. IDA also has the standing to mobilize scientific resources from across the globe in support of an initiative which has unprecedented interest to the global scientific community.

Agreed Actions

42. At negotiations, agreements and assurances regarding the project's organization and operational arrangements were obtained, which *inter alia* included the following: (a) in order to ensure the cost-effectiveness of any one country's investments, the three governments agreed to take steps to ensure that project components with regional implications will proceed at a comparable pace in all three countries; (b) a high level panel of internationally renowned scientists, with 7 members, will be appointed to serve as an advisory group for the scientific studies in the lake, and they will meet at least once a year to review progress on program implementation; (c) national steering committees will be established in all three countries for the water hyacinth control program; (d) the policies, procedures and core membership of the Regional Policy and Steering Committee will not be changed without agreement of IDA; (e) herbicides used in the water hyacinth control program will be acceptable to IDA, they will be used sparingly, in strictly selected and confined areas, all persons applying such herbicides will be trained in their safe and appropriate handling and use, and mechanisms for careful monitoring of herbicide use will be established; (f) with the exception of the biological control agents for water hyacinth, no new species will be introduced into the lake without first carrying out an environmental impact assessment; (g) prior to implementation of any intervention likely to have a negative impact on fish ecology (such as changes in net sizes or other controls over the fishing effort), the proposed intervention will be subjected to an environmental impact assessment, with provision for public comment; (h) prior to implementation of any project component related to pollution control, a project specific environmental assessment will be carried out to guard against the possibility that any uncontrolled dumping of domestic and industrial wastes would take place; (i) the National Secretariats will prepare annual work programs, training plans, and related financing plans and submit them to IDA for review by March 31 of each year; the annual work programs would include details of the procurement of goods and services and the procedures to be adopted for such procurement within the limits given earlier and agreed by IDA; (j) disbursement arrangements will be satisfactory to IDA, and each Government will open a Special Account at a commercial bank, and operate it in a timely manner; (k) procurement of the goods, works, and consultant services required for the project and to be financed out of the proceeds of the GEF Grant and the IDA Credit will be undertaken in accordance with procedures satisfactory to IDA; (l) the three Governments will have

the records and accounts of the project, including those for the Special Accounts and Statements of Expenditure (SOEs), audited each fiscal year by independent auditors acceptable to IDA; and will submit to IDA the audit reports within six months after the close of the respective fiscal year; the audit reports will include a statement on the adequacy of the accounting systems and internal controls; (m) after the first project year, an annual comprehensive review will be held with the donors, to consider the annual work plan and new financial procedures and arrangements for the forthcoming fiscal year; modifications of project design and/or procedures will be introduced as appropriate; (n) annual National Workshops coordinated by the National Secretariats and an annual Regional Workshop coordinated by the Regional Secretariat in Tanzania will be held to assess implementation progress and agree on any adjustments needed; (o) a Mid-Term Review will be held prior to the end of March, 1999, during which the performance of the Lake Victoria Fisheries Organisation, the three National Secretariats, and the Policy Steering Committee will be reviewed and appropriate changes made; the review will also carry out an in-depth examination of the arrangements for community participation in project implementation; as part of the Mid-Term Review, the three Governments will prepare an updated analysis of the transboundary environmental concerns, to guide the second phase of project implementation, and set the stage for subsequent initiatives; (p) subject to satisfactory completion of the Levy Trust Study, the three Governments will jointly establish, by the end of July, 1988, a Levy Trust Fund into which funds raised from commercial fisheries will be placed and disbursed in support of joint fisheries management and central monitoring initiatives under the project; (r) the three Governments jointly will prepare and submit to IDA an Implementation Completion Report within six months after the closing date; the Implementation Completion Report will include a revised Strategic Action Program, containing an outline of interventions needed to address priority problems.

43. Prior to Credit Effectiveness, the three Governments will, *inter alia*: (a) confirm the membership of the Regional Policy and Steering Committee; (b) appoint Heads to the three National Secretariats with qualifications and experience equivalent to a Deputy Principal/Permanent Secretary, and appoint to each Secretariat a Procurement/Disbursement Officer, an Operations Officer, and a Management Information Systems Officer; (c) establish the Panel of Scientists; (d) agree standard methods for measuring and monitoring water quality; (e) provide evidence satisfactory to IDA that each of the three Governments has made budgetary allocations representing their first year contribution to the Project; (f) finalize and submit to IDA the annual work plans and financial plans for the first year of the Project Implementation Plan.

Environmental Aspects

44. The program is in effect a regional environmental action plan for Lake Victoria, having as its central objective improving the environmental conditions of Lake Victoria and its catchment. However, the program will encompass a wide range of different interventions and investments, and has been designated as Category B for environmental analysis to ensure that adequate attention will be given to the many overall positive impacts as well as to individual components which might have adverse local environmental effects.

45. The project will locate and quantify the environmental problems arising from the very rapid growth of population around the shores of the lake, and in its catchment, identify the sources of pollution and nutrient inflows into the lake, propose and begin to implement ameliorative measures, including innovative pilot measures, and strengthen existing institutions to sustain solutions in the longer term. The area in which the project

is expected to make the most economic difference will be in heading off developing instability and possible serious collapse of the valuable lake fisheries.

46. The project will also address any negative environmental impacts which may arise in the course of project implementation itself, in the following ways: (a) *fish ecology* - any proposed interventions (such as changes in net sizes or other controls over the fishing effort) will be clearly defined and carefully assessed through an environmental impact assessment before introduction, in order to avoid unforeseen effects from attempts to restore and stabilize the fish ecology in the lake; (b) *aquaculture* - no new species will be introduced into the lake into the lake without first carrying out an environmental impact assessment; (c) *biological control agents* - all biological control agents under consideration have been subjected to exhaustive field testing over twenty years in several countries, and there are no remaining doubts about their safety; any additional biological control agents available during project implementation will be subjected to similar testing protocols; (d) *herbicides* - use of herbicides in the water hyacinth control program will be confined to those acceptable to IDA, they will be used sparingly, in strictly selected and confined areas, all persons applying such herbicides will be trained in their safe and appropriate handling and use, and mechanisms for careful monitoring of herbicide use will be established; (e) *pollutants* - pollution control projects will be subjected to project specific environmental assessments to guard against the possibility that any uncontrolled dumping of domestic and industrial wastes might take place.

Program Objective Categories

47. The overwhelmingly positive contributions of the program to *environmentally sustainable development* have been outlined above. The program will pursue *poverty alleviation* through its emphasis on restoration of stability to the lake fishery, with positive impacts on the lives of at least 500,000 persons whose livelihoods depend directly on the fisheries. Through community involvement in implementation, the program will seek to appropriate for poorer groups a larger share of gains arising from the fishery, and from using resources in wetlands and other parts of the lake catchment. Improvements in water quality around the lake will contribute to better health for all who rely on it for their water supply, especially poorer groups. The welfare of *women* will be improved by additional income-earning opportunities in fishery-related and wetland activities, as well as by better access to water supply and improved health through the control of aquatic weed infestations. The project will foster managerial efficiencies in both the *public and the private sectors* by improving policy analysis, regulatory enforcement, harmonized internal and external systems and procedures, and an environmental information base. The project will also support *regional cooperation* and understanding among the three riparian countries.

Project Benefits

48. This regionally coordinated environmental management project is expected to generate greater benefits than the sum of any individual country programs, since it will reduce uncertainty in respect to actions by riparian partners and lower the probability that benefits of actions taken by an individual government will be offset by actions or non-actions by others. The project is expected to lay the essential foundations of knowledge, capacity building and establishment of institutions for a wider program of investments which will generate: (a) net economic benefits estimated to have a present value to the lake communities of US\$275-520 million from stabilising lake fisheries; (b) a reduction in the annual costs of the current water hyacinth infestation, estimated to be

about US\$6-10 million per year, as well as avoidance of even larger costs which might be associated with increased infestations in the future were nothing to be done; (c) a reduction in the additional water supply costs arising from treating water of deteriorated quality, these costs estimated to be at least US\$3.5 million per year; (d) diminished incidence of disease among riparian communities as a result of improved quality of water and sanitary environment; (e) increased productivity from wetlands and areas with degraded soils; and (f) greater biodiversity, producing benefits to local communities, tourists and the global community, compared to a "non-program" situation. A more detailed discussion of project benefits is found in Schedule B.

Risks

49. The main risk is that the strength of the commitments by the three Governments will fail to sustain a regional environmental management program for the lake basin. This may express itself through inadequate budgetary arrangements to fund regional bodies (such as the LVFO) or coordinating agencies, erosion over time of the powers given to such institutions, or unwillingness or lack of capacity to follow up on regional regulatory decisions or guidelines through enforcement at the national level. Since the three governments have collaborated well during program preparation, and the proposed program provides many opportunities for low-risk collaboration on technical issues, which should build confidence steadily during implementation, any waning commitment would seem likely to arise only from sources external to the program. The risk of inadequate or unforeseen results emerging from the research and studies in the program would be reduced by the appointment of a panel of scientists who will review regularly scientific issues arising in the course of project implementation. In the event of fiscal crises, the project is structured so as to allow postponement of work in the pilot zones planned for the outer years of the project. In this way the essential core of lake-wide activities will be preserved, as well as the coordinated nature of the adaptive environmental management approach in at least a sub-set of the 14 pilot areas. Upon resolution of any funding crisis, work will be resumed with minimum disruption to progress.

Schedule A

LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT
Project Costs (US\$'000)

Project Component	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
A. Fisheries Management (LVFO)	314	1,649	1,964	84	3
B. Fisheries Research	5,893	5,910	11,802	50	17
1. Fish Biology and Biodiversity Conservation	2,618	3,164	5,782	55	8
2. Aquaculture	1,544	1,237	2,782	44	4
3. Socio-Economics Studies	1,332	1,048	2,382	44	3
4. Establishing Database	399	458	858	53	1
C. Fisheries Extension, Policies, and Laws	7,411	4,947	12,359	40	18
D. Water Hyacinth Control	5,423	2,042	7,465	27	11
E. Water Quality Monitoring	3,226	5,262	8,488	62	12
1. Eutrophication	2,720	3,409	6,129	55	9
2. Sedimentation (pilot study)	152	364	516	71	1
3. Hydraulic Conditions (pilot study)	138	700	838	83	1
4. Lake Victoria Management Model	216	789	1,005	78	1
F. Industrial and Municipal Waste Management	4,074	5,156	9,230	56	13
1. Management of Industrial and Municipal Effluent	1,871	1,897	3,768	50	6
2. Tertiary Municipal Effluent Treatment (pilot project)	481	260	740	35	1
3. Tertiary Industrial Effluent Treatment (pilot project)	462	260	722	36	1
4. Priority Waste Management Investments	1,260	2,740	4,000	69	6
G. Land Use and Wetland Management	8,093	4,468	12,560	36	18
1. Pollution Loading	1,962	1,603	3,566	45	5
2. Buffering Capacity of Wetlands	1,751	1,339	3,091	43	5
3. Assessment of Agro-Chemicals (pilot)	344	424	768	55	1
4. Soil and Water Conservation (pilot)	1,143	182	1,325	14	2
5. Sustainable Use of Wetlands Products (pilot)	969	366	1,336	27	2
6. Afforestation	1,924	552	2,476	22	3
H. Policy and Institutional Framework	3,097	2,193	5,290	41	5
1. LVEMP Secretariats	1,975	462	2,436	19	4
2. Support to Riparian Universities	319	628	947	66	1
3. Fisheries Levy Trust	803	953	1,755	54	2
4. Pollution Disaster Contingency	-	150	150	100	1
Subtotal Base Costs	37,532	31,627	69,159	46	100
Physical Contingencies	3,550	2,604	6,155	42	9
Price Contingencies	707	1,482	2,270	65	3
TOTAL COSTS	41,869	35,713	77,582	46	112

Financing Plan
(US\$ million)

Project Component	Governments	GEF	IDA	Total	%
A. Fisheries Management (LVFO)	0.2	2.1		2.3	3
B. Fisheries Research	1.3	8.8	3.2	13.3	17
C. Fisheries Extension, Policies, and Laws	1.4		12.7	14.1	18
D. Water Hyacinth Control	0.8	4.5	3.0	8.3	11
E. Water Quality Management	1.0	8.8		9.8	12
F. Industrial and Municipal Waste Management	1.0		8.9	9.9	13
G. Land Use and Wetland Management	1.4	7.4	5.3	14.1	18
H. Policy and Institutional Framework	0.6	3.6	1.9	6.1	8
TOTAL COSTS	7.6	35.0	35.0	77.6	100

Schedule B

ECONOMIC ANALYSIS

Background

The LVEMP is a comprehensive program aimed at rehabilitation of the lake ecosystem for the benefit of the people who live in the catchment and its area of influence. The scientific evidence shows that the present methods of exploitation and development in the catchment are unsustainable, and that without intervention there could be serious environmental and related socio-economic consequences. The most pressing concern is a possible decline in the very valuable fishery (currently worth about US\$320 million annually in export revenue), but this predicted decline represents merely an immediately obvious outcome of the loss of resilience of the ecosystem. Sediments and pollution are degrading water quality, increasing urbanization and agricultural expansion are both resulting in the loss of wetlands – including swamps and satellite lakes that still shelter a diminishing remnant of a once spectacular native aquatic fauna, changes in feeding chains and trophic systems since the introduction of exotic fish species are trending toward a highly unstable fisheries monoculture, and – a fundamental and ominous change – the anoxic portion of the lake waters (a biologically almost dead zone) has been steadily increasing over recent years.

The fundamental objective of the LVEMP is to restore a healthy, varied lake ecosystem which is inherently stable and which can support, in a sustainable way, the many human activities in the catchment. Development pressures in the catchment are increasing because of natural population growth and migration from poorer and less fertile rural areas, and the multi-purpose central role of the lake is becoming increasingly important even as its capacity to cope is being threatened.

The economy of the lake catchment is worth in the order of US\$3-4 billion annually and supports an estimated population of 25 million people at standards of living in the range of US\$90-270 per capita p.a., based on national figures. The lake catchment economy is principally an agricultural one, with a number of cash crops (including exports of fish) and a high level of subsistence fishing and agriculture. The quality of the physical environment is therefore a fundamental factor in maintaining and increasing the living standards of the growing population.

Gross Benefits

The main economic benefits of the overall LVEMP derive from avoiding the losses that can be anticipated if effective action is not taken. According to the best understanding of the local and international scientific research community, as documented in the material presented by the Regional Task Forces for project preparation, the major consequences of not halting the present trends could be: (a) a decline in the overall fishery as a result of both overfishing and deterioration of lake water quality; (b) increasing extent and severity of water hyacinth infestation; (c) unsuitability of the lake water for domestic supply or animal watering; and (d) continued degradation of the wetlands.

(a) Fisheries

The most dramatic and direct effect of not taking action could be the onset of instability in the Nile perch fishery. One possible scenario would be a highly variable and unpredictable annual catch, which could drop in some years to as little as 10 percent of current

levels. On the other hand, fisheries models suggest that a sustainable fishery could be developed which would allow annual yields of perhaps 90 percent of current levels, still dominated by Nile perch but with a wider range of other species.

The value of moving to the sustainable level of catch can be estimated, on a conservative basis, as the difference between the income stream from 90 percent of the current catch and that from an average 50 percent of the current catch, calculated after year 5 of a management programme:

Export value of a sustainable fishery: 90% of \$320m p.a. = \$288m p.a.
Export value of an uncontrolled fishery: 50% of \$320m p.a. = \$160m p.a.
Difference, starting from year 6, attributable to the LVEMP = \$128m p.a.
Present value of this revenue stream at a 12 percent discount rate: = \$600m.

The major potential benefit of avoiding the projected collapse of the fisheries would therefore be preserving export revenues with a present value of **US\$0.4-0.8 billion**, depending on the assumptions used. The direct revenues to the fishing communities on the lake, from these export fisheries, are estimated to have a total present value of **US\$0.2-0.4 billion**. These communities would receive additional benefits from two sources: (a) that portion of the value added in processing and packaging which is distributed to them in the form of payments for good and services, estimated to have a present value of **US\$40-80 million**; and (b) income from local production and marketing of fish, estimated to have a present value of **US\$10-20 million**. Moreover, one objective of the LVEMP is to increase the proportion of local food fish in the system and the benefits of the program therefore include a real increase in the local fishery, which would be at least of the same order of magnitude as the loss avoided. The total present value of the impact of the LVEMP on the local fish economy is therefore estimated to be **US\$20-40 million**.

On reasonable assumptions, therefore, it is estimated that successful implementation of the LVEMP could protect annual export earnings from the fishery to the extent of about **US\$128 million per annum**, which represents a present value of exports of **US\$600 million**, and of revenue to the lake community of **US\$240-480 million**. In addition, the present value of the local fishery would be increased by **US\$20-40 million** over the case where no action is taken.

Reversing the direct loss of revenue would have major impacts through the various industries and activities which support the fishermen active on the lake. It has been estimated that there is a multiplier of about 5 in terms of the numbers of people involved in these supporting activities and therefore half a million people, including workers and their families, would be affected by reversing the loss of revenue.

Water hyacinth

The spread of the water hyacinth infestation is imposing a wide range of direct costs on the lake community. These costs include: (a) delays in commercial waterborne transport of people and goods (in some cases reported to result in a 10-20 percent increase over scheduled times); (b) increased operating costs (and possible loss of revenue) for hydropower production at Owens Falls Dam, due to clogging of water intakes; (c) loss of fishing time (and revenue) as a result of blocking of the beaches; (d) increased difficulty and time spent on gathering water in villages where access to traditional water collection areas is blocked or dangerous (because of snakes or crocodiles in the weed); and (e) blockage of intakes and loss of production at urban and industrial water supply systems.

Some initial estimates have been made for these costs but further data will be required to refine the estimates. It should be noted that these figures represent the *present* costs: the water hyacinth infestation is increasing at a rapid rate and - unless controlled - will spread and also become more of a problem at existing sites. In the absence of a successful control program, the following are the estimated costs within five years: (a) maintaining a clear passage for ships to dock at Port Bell in Uganda: US\$3-5 million p.a.; (b) cleaning intake screens at the Owen Falls hydroelectric power plant at Jinja in Uganda: \$1 million p.a.; (c) losses in local fisheries from accumulation of water hyacinth at fishing beaches and landing sites around the lake making it difficult or impossible for fishing boats to be launched or recovered: US\$0.2 million p.a. but with a very serious local impact; (d) loss of the beaches as a water supply for domestic, stock and agricultural purposes: US\$0.35 million p.a.; (e) loss of supply or increased maintenance costs in urban water supply schemes because of blockages of the water intakes by water hyacinth: US\$1.5 million p.a.; and (f) small-scale horticultural irrigation schemes rendered useless because of blockages of channels and pipes with hyacinth: no costs have yet been attributed to these losses but they are important from a distributional viewpoint since such schemes are being developed to help women in the poorer lakeshore areas.

The total of these direct costs attributable to the water hyacinth (*at its present levels*) is estimated to be US\$6-10 million p.a., with a present value of US\$25-40 million. This figure can be compared with the suggested US\$4.5 million cost for the Ugandan government's emergency action program to tackle the problem, which must represent a lower bound to estimates of the damage in what is only part of the total shoreline.

Water quality

Deteriorating water quality will have a number of direct effects, the avoidance of which can be counted as potential benefits of the programme. These include: (a) additional water treatment costs to deal with increasing levels of algae; (b) impacts on water available for cattle: algal blooms can render water unsuitable for cattle and in extreme cases are known to be fatal to animals; (c) loss of potential tourist revenue: polluted or foul-smelling water would prevent the expansion of the present (low) level of tourism to the lake; and (d) health effects of increased malaria and bilharzia as a result of stagnant and polluted water.

The costs of water supply improvements can be calculated once the extent of supply systems round the lake are detailed. As a first estimate, assuming (as before) that one million people are affected, an additional cost of US\$1 per capita would mean US\$1.5 million p.a. at present, but this would increase as the population connected increased and a value double this would be quite reasonable, i.e. US\$3 million p.a. The costs of water for animals is more difficult to estimate but costs of \$1 per beast spread over half a million cattle in the vicinity of the lake are plausible. A minimum cost associated with the decline in water quality is therefore estimated at US\$3.5 million p.a., (present value US\$15 million) and increasing.

Wetlands

Given the lack of data on the type and extent of wetlands it is not possible to estimate the value of preserving these systems, but a wide range of functions of wetlands have been identified, both in general and for Lake Victoria in particular. These include: buffering of the impacts of increased loads of nutrients and sediments; breeding areas for fish and animals of value to the local population; protection of local water supply sources; provision of papyrus and other materials of commercial value. Preserving the wetlands is very important for

sustaining biodiversity, as well as for helping to maintain the lake as a functioning and stable ecosystem.

On the other hand, development of wetlands has been promoted because of their potential for increased agricultural production and because of the perceived health problems associated with wetlands (such as mosquitoes and tsetse fly). Further work is required to understand and quantify the benefits of preserving key components of the existing wetlands systems but the balance of professional opinion, supported by informed local comment, is that the net value of preservation would be high.

Biodiversity

One objective of the LVEMP is the preservation of the existing richness of the haplochromid fish fauna because of its scientific interest and its role in providing a resilient ecosystem for the whole lake. The ecosystem support benefits are included in the valuation of stabilizing the fisheries, but the intrinsic and scientific value of the biodiversity that is believed to be in the process of continuing reduction under current conditions are additional benefits for which no valuation is yet available.

Summary

The major direct economic benefit for which the program lays the foundation would be avoidance of the predicted collapse in the fisheries, which is estimated to have a present value to the lake community of US\$270-520 million. The water hyacinth problem, which is rapidly becoming more severe, is estimated to have an annual cost of US\$6-10 million under current levels of infestation. These costs, whose present value is an estimated US\$25-40 million, as well as even larger costs which might be associated with increased infestations in the future were nothing to be done, would be largely avoided if the LVEMP were successfully implemented. Deteriorating water quality may impose additional water supply costs which are estimated to be a minimum of US\$3.5 million p.a. (present value US\$15 million) and would increase considerably without action. Other benefits arising from the preservation of wetlands and of biodiversity have not been valued here.

Net Benefits

The costs of achieving the benefits identified here will include the direct costs of the LVEMP, which is a regional program, and of national actions which are taken in support of the program. Many of the national expenditures, in particular, will be economically justified in their own right (for example, fisheries post-harvest improvements or provision of sewerage) and so the effect of the LVEMP will be to bring forward in time the net benefits of these programmes. In such cases, the costs and benefits attributable to the LVEMP will be the marginal ones related to the changes in timing or focus of the national programmes.

Typical of the projects to be tackled as national concerns, within the framework of the LVEMP, which would be expected to produce net benefits in their own right, and where the costs attributable to the LVEMP may be exceeded by the benefits achieved through bringing the projects forward would be: expansion of artisanal fishing and processing; reduction in post-harvest fish losses; implementation of water hyacinth control; wetland conservation; improved pasture management; catchment soil conservation; rural water and sanitation; urban sewerage upgrading; industrial pollution abatement. In so far as these projects can be implemented under existing or proposed programmes and as long as they are economic in their own right, the net costs to the LVEMP will be minimal.

Schedule C1

Kenya

Lake Victoria Environmental Management Project

Summary of Proposed Procurement Arrangements
(US\$ million)

Item	ICB	NCB	Other	Total
Civil Works		2.8		2.8
GEF		(0.1)		(0.1)
IDA		(2.5)		(2.5)
Vehicles	2.2		0.1	2.3
GEF	(1.0)		(0.1)	(1.0)
IDA	(1.0)			(1.0)
Equipment			3.6	3.6
GEF			(1.9)	(1.9)
IDA			(1.4)	(1.4)
Training			3.4	3.4
GEF			(1.4)	(1.4)
IDA			(1.6)	(1.6)
Consultants			3.7	3.7
GEF			(2.2)	(2.2)
IDA			(1.2)	(1.2)
Operating Costs			11.1	11.1
GEF			(4.9)	(4.9)
IDA			(5.1)	(5.1)
Totals	2.2	2.8	21.9	26.9
GEF	(1.0)	(0.1)	(10.4)	(11.5)
IDA	(1.0)	(2.5)	(9.3)	(12.8)

Notes: the difference between the total project costs in each category and the GEF and IDA provisions (in parentheses) would be financed by the Government.

Tanzania

Lake Victoria Environmental Management Project

Summary of Proposed Procurement Arrangements
(US\$ million)

Item	ICB	NCB	Other	Total
Civil Works		1.9		1.9
GEF		(0.1)		(0.1)
IDA		(1.6)		(1.6)
Vehicles	1.9		0.1	1.9
GEF	(0.8)		(0.1)	(0.8)
IDA	(0.9)			(0.9)
Equipment			2.8	2.8
GEF			(1.5)	(1.5)
IDA			(1.0)	(1.0)
Training			3.4	3.4
GEF			(1.6)	(1.6)
IDA			(1.4)	(1.4)
Consultants			3.7	3.7
GEF			(2.3)	(2.3)
IDA			(1.0)	(1.0)
Operating Costs			8.9	8.9
GEF			(4.0)	(4.0)
IDA			(4.1)	(4.0)
Totals	1.9	1.9	18.8	22.6
GEF	(0.8)	(0.1)	(9.4)	(10.3)
IDA	(0.9)	(1.6)	(7.6)	(10.1)

Notes: the difference between the total project costs in each category and the GEF and IDA provisions (in parentheses) would be financed by the Government.

Uganda

Lake Victoria Environmental Management Project

Summary of Proposed Procurement Arrangements
(US\$ million)

Item	ICB	NCB	Other	Total
Civil Works		2.2		2.2
GEF		(0.3)		(0.3)
IDA		(1.8)		(1.8)
Vehicles	2.5			2.5
GEF	(1.1)			(1.1)
IDA	(1.1)			(1.1)
Equipment			3.3	3.3
GEF			(1.7)	(1.7)
IDA			(1.3)	(1.3)
Training			3.2	3.2
GEF			(1.3)	(1.3)
IDA			(1.6)	(1.6)
Consultants			5.2	5.2
GEF			(3.5)	(3.5)
IDA			(1.2)	(1.2)
Operating Costs			11.7	11.7
GEF			(5.3)	(5.3)
IDA			(5.1)	(5.1)
Totals	2.5	2.2	23.4	28.1
GEF	(1.1)	(0.3)	(11.8)	(13.2)
IDA	(1.1)	(1.8)	(9.2)	(12.1)

Notes: the difference between the total project costs in each category and the GEF and IDA provisions (in parentheses) would be financed by the Government.

Schedule C2

Summary of Disbursement Schedule
Estimated GEF/IDA Disbursements

KENYA

Category	GEF Grant (US\$ m)	IDA Credit (US\$ m)	Percent of Financing
1. Civil Works	0.1	1.5	100% of Foreign Expenditures and 90% of Local Expenditures
2. Vehicles and Equipment	2.7	2.2	100% of Foreign Expenditures and 90% of Local Expenditures
3. Consultants & Training	3.3	2.5	100 %
4. Micro-projects		0.7	90 %
5. Operating Costs	4.4	4.6	90 %
6. Unallocated	1.0	1.3	
Total	11.5	12.8	

TANZANIA

Category	GEF Grant (US\$ m)	IDA Credit (US\$ m)	Percent of Financing
1. Civil Works	0.1	0.7	100% of Foreign Expenditures and 90% of Local Expenditures
2. Vehicles and Equipment	2.1	1.7	100% of Foreign Expenditures and 90% of Local Expenditures
3. Consultants & Training	3.5	2.2	100 %
4. Micro-projects		0.8	90 %
5. Operating Costs	3.5	3.7	90 %
6. Unallocated	1.1	1.0	
Total	10.3	10.1	

UGANDA

Category	GEF Grant (US\$ m)	IDA Credit (US\$ m)	Percent of Financing
1. Civil Works	0.3	0.6	100% of Foreign Expenditures and 90% of Local Expenditures
2. Vehicles and Equipment	2.5	2.2	100% of Foreign Expenditures and 90% of Local Expenditures
3. Consultants & Training	4.3	2.5	100 %
4. Micro-projects		1.0	90 %
5. Operating costs	4.8	4.6	90 %
6. Unallocated	1.3	1.2	
Total	13.2	12.1	

Schedule C3

KENYA, TANZANIA, AND UGANDA

LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT

Estimated Schedule of Disbursement (GEF and IDA)
(US\$ million)

IDA FY	Semester	Disbursement	Cumulative Disbursement	% Total
1997	1	0.0	0.0	0
	2	6.8	6.8	10
1998	1	6.8	13.6	19
	2	7.2	20.8	30
1999	1	7.2	28.0	40
	2	7.6	35.6	51
2000	1	7.6	43.2	62
	2	7.1	50.3	72
2001	1	7.1	57.4	82
	2	4.8	62.2	89
2002	1	4.8	67.0	96
	2	2.0	69.0	99
2003	1	1.0	70.0	100

Schedule D

TIMETABLE FOR KEY PROCESSING EVENTS

Time taken to prepare:	15 months
Prepared by:	Project Preparation Team comprising representatives of the Governments of Kenya, Uganda and Tanzania through multidisciplinary Regional Task Forces and National Working Groups.
Appraisal mission departure:	December 1, 1995 ¹
Negotiations:	May 20-22, 1996
Planned date of effectiveness	November 1, 1996
Relevant ICRs:	None

¹ This report is based on the findings of an appraisal mission in December 1996. The mission was led by Graeme Donovan, Principal Economist, Agriculture and Environment Operations Division, Eastern Africa Department (Task Manager), and included: Messrs/Mmes. Radha Singh (Institutional Specialist), Robert Hecky (Limnologist), Craig Harris (Sociologist). The mission was assisted by representatives of the UNDP, UNEP and FAO. The mission was assisted by and worked cooperatively with the Heads of the LVEMP National Secretariats of the three countries, the members of the Regional Policy and Steering Committee, the Ministries of Environment and Natural Resources, Water, Agriculture, Fisheries and Finance of the participating countries. The appraisal mission also worked in close cooperation with several specialised agencies in fisheries research, management, aquatic weed control, agriculture, water quality, and wetlands management of the three countries along with representative of the local/regional governments, and NGOs and CBOs responsible for the development of the Project. Valuable contributions were made by Lars Vidaeus and Robin Broadfield (ENVGC) and Les Kaufman (New England Aquarium). Milena Hileman, Lorenzo Marchesini, and Cora Favis assisted with preparing the cost tables. The peer reviewers are Stephen Lintner (ENVLW), Andrew Bond (ENVLW), Robert Robelus (ENVLW), Ernst Lutz (ENVPE), and Cynthia Cook (AF4AE). Dr. Edwin Ongley is the GEF technical reviewer. Sushma Ganguly and James Adams are the Division Chief and Department Director, respectively.

Schedule E

STATUS OF BANK GROUP OPERATIONS IN KENYA

STATEMENT OF BANK LOANS AND IDA CREDITS

As of March 31, 1996

(US\$ millions)

Credit No.	Fiscal Year	Purpose	(Less Cancellations)		Undisbursed
			Bank	IDA	
Fifty-four (54) loans and sixty seven (67) credits closed, of which SAL, SECAL or Program Loan/Credit:			985.87 (60.90)	1519.23 (925.45)	
Cr.19040	1988	Population III		12.09	4.90
Cr.19730	1989	Geothermal Development		40.70	3.00
Cr.20600	1990	Third Nairobi Water Supply		64.80	21.54
Cr.20620	1990	Coffee Improvement II		46.80	15.76
Cr.21110	1990	Population IV		35.00	30.27
Cr.21980	1991	Forestry Development		19.90	10.45
Cr.21990	1991	National Agric. Ext. II		24.90	17.95
Cr.22040 (S)	1991	Agric. Sector Adjustment II		41.52	5.42
Cr.23090	1992	Universities Investment		55.00	46.12
Cr.23100	1992	Health Rehabilitation		31.00	23.58
Cr.23330	1992	Mombasa and Coastal Water II		43.20	25.35
Cr.23340	1992	Wildlife Services		60.50	26.43
Cr.24400	1993	Parastatal Reform TA		23.32	18.04
Cr.24450	1993	Agric. Sect. Mngt. II		19.40	13.73
Cr.24600	1993	Emergency Drought Recovery		20.00	9.09
Cr.25960	1994	Micro & Small Enterprise		21.83	21.17
Cr.26710	1995	Institutional Development		25.35	22.96
Cr.26860	1995	Sexually Transmitted Infections		40.00	39.38
Cr.27970 *	1996	ARID Lands		22.00	21.58
Cr.28110 *	1996	Urban Transport		115.00	112.41
Cr.28120 *	1996	Nairobi Mombasa Road		<u>50.00</u>	<u>49.57</u>
		Total	985.87	2331.54	538.70
		of which repaid	<u>733.04</u>	<u>59.88</u>	
		Total held by Bank & IDA	252.83	2271.66	
		Amount sold 11.74			
		of which repaid 11.74			
		Total undisbursed			538.70

(S) Indicates SAL/SECAL Loans and Credits.

* Not yet effective.

Schedule E
Kenya
STATEMENT OF IFC INVESTMENTS
As of March 31, 1996
(In Millions US Dollars)

Fiscal Years Committed	Obligor	Type of Business	Original Gross Commitments				Held by IFC	Held by Ptpnt.	Undisb. incl. Ptpnt.
			IFC Loan	IFC Equity	Ptpnt.	Totals			
1967/73	a/ Kenya Hotel Properties, Ltd.	Hotels and Tourism	4.20	0.72	0.96	5.88			
1970/74/77/79/81/88/90/9	Panafrican Paper Mills (E.A.) Ltd.	Timber, Pulp and Paper	52.26	5.79	3.97	62.02	24.87		
1972	Tourism Promotion Services (Ken)	Hotels and Tourism	1.63		0.79	2.42		0.04	
1976	Rift Valley Textiles Limited (RIV)	Textiles	6.87	2.77	1.30	10.94	2.06	0.39	
1977	a/ X - Loans to small & medium scal	Financial Services	2.00			2.00			
1980/84	Development Finance Company o	Financial Services	5.07	1.31		6.38	1.31		
1981	a/ Kenya Commercial Finance Com	Financial Services	5.00			5.00			
1982	a/ Bamburi Portland Cement Compa	Cement and Construction M	4.43			4.43			
1982	Diamond Trust of Kenya Limited	Financial Services		0.80		0.80	0.80		
1982/87	Industrial Promotion Services (Ke	Financial Services		1.17		1.17	1.17		0.62
1983	a/ Tetra Pak Converters Limited	Timber, Pulp and Paper	2.17	0.37		2.54			
1984/92	Leather Industries of Kenya Limit	Manufacturing	2.12	0.63		2.75	0.63		
1986	Equatorial Beach Properties Limit	Hotels and Tourism	3.67			3.67	5.36		
1986	a/ Madhupaper International Limited	Timber, Pulp and Paper	8.50	1.97	28.65	39.12			
1986	a/ Oil Crop Development Limited	Food and Agribusiness	9.65	1.40		11.05			
1988/92	Ukulima Tools Ltd.	Motor Vehicles and Components (includ		0.06		0.06	0.06		
1989	Premier Foods Industries Ltd	Food and Agribusiness		0.11		0.11	0.11		
1989	a/ Premier Refrigeration and Engine	Food and Agribusiness		0.14		0.14			
1990	Frigoken Ltd	Food and Agribusiness		0.06		0.06	0.06		
1991	Malaa Industries Limited	Food and Agribusiness	0.53	0.16		0.69	0.69		
1991	Novaskins Tannery Ltd	Manufacturing		0.14		0.14	0.14		
1992	a/ Integrated Wood Complex Limite	Timber, Pulp and Paper	0.40			0.40			
1992/93	Allpack Industries Limited	Timber, Pulp and Paper		0.36		0.36	0.36		
1993	Future Hotels Limited	Hotels and Tourism	0.50			0.50	0.43		
1994	Aura Garments Manufacturing Li	Textiles	0.30			0.30	0.30		
1994	East Africa Reinsurance Company	Financial Services		1.10		1.10	1.10		0.30
1994	Mosi Limited	Food and Agribusiness	0.29			0.29	0.23		
1994	a/ Sawa Flora Limited	Food and Agribusiness	0.32	0.19		0.51			
1994	Waterfront Hospitality Limited	Hotels and Tourism	1.00			1.00	1.00		1.00
1995	Capital Fish Kenya Limited	Food and Agribusiness	0.65			0.65	0.65		0.65
1995	International Hotels (Kenya) Limi	Hotels and Tourism	6.00			6.00	6.00		4.80
1995	Island Farm	Food and Agribusiness	0.50			0.50	0.50		0.50
1995	Kihingo Roses Limited	Food and Agribusiness	0.52			0.52	0.49		
1995	Vegpro Kenya Limited	Food and Agribusiness	0.95			0.95	0.95		0.15
1996	Jacaranda Hotel Ltd.	Hotels and Tourism	0.50			0.50	0.50		0.50
1996	Magadi Soda Company Limited	Chemicals and Petrochemica	9.00			9.00	9.00		8.60
	Total gross commitments b/		129.03	19.25	35.67	183.95			
	Less cancellations, terminations, repayment & sales		80.67	8.80	35.28	124.75			
	Total commitments now held c/		48.36	10.45	0.39	59.20	58.81	0.39	17.12

Kenya
STATEMENT OF IFC INVESTMENTS
 As of March 31, 1996
 (In Millions US Dollars)

<u>Pending Commitments</u>			
AEF-K-REP BANK		1.00	1.00
AEF-KENFUNDS		0.17	0.17
AEF-KENFUNDS MGT		0.09	0.09
AEF-WAKATE CENTR	0.43	0.43	0.86
Panafrican Paper Mills (E.A.) Ltd. Timber, Pulp and Paper	15.00		15.00
Total pending commitments	15.43	1.69	17.12
Total commitments held and pending commitments	63.79	12.14	0.39
Total undisbursed commitments	16.20	0.92	17.12

a/ Investments which have been fully cancelled, terminated, written-off, sold, redeemed or repaid.

b/ Gross commitments consist of approved and signed projects.

c/ Held commitments consist of disbursed and undisbursed investments.

KENYA - IMPLEMENTATION ISSUES

1. As of March 31, 1996, there were 21 ongoing projects in the Kenya portfolio representing total commitments, exclusive of cancellations, of \$812.3 million; three of these projects (in the amount of \$187 million) were approved during the second and third quarters of the fiscal year and are expected to be made effective shortly. Undisbursed amounts totaled \$538.7 million, or 66.3 percent of total commitments; excluding the three recently approved projects, the corresponding figure was 56.2 percent. Kenya's disbursement performance over the past few years, as measured by the disbursement ratio, has shown modest improvement - from 14.2 percent in FY93 to 15.4 percent in FY94 to 16.3 percent in FY95. The corresponding figure for the first ten months of the current fiscal year was 16.5 percent; present expectations are that the final FY96 figure will be around 21 percent. In the meantime, as of end-April 1996, eight of the 18 effective and disbursing credits had posted individual disbursement ratios for the fiscal year ranging between 22 and 40 percent.

2. Considerable progress has been made during the past two years in laying the foundation for aggressively addressing a number of generic implementation problems that have negatively impacted on the quality of the Kenya portfolio. In addition to regular project supervision, there has been since early 1994 an interactive dialogue between the Government and the Bank aimed at resolving problems being faced by the portfolio in general. It is explicitly recognized that Government commitment and ownership remain critical to timely and efficient project implementation, including resolution of major implementation problems if and as they arise. The August 1994 CPPR, organized with the active involvement of the Government, effectively initiated an ongoing process in which the Government and Bank staff are jointly addressing a number of "generic implementation bottlenecks" (including inadequate project budgetary allocations, delays in procurement/payment of contractors and suppliers, excessive delays in processing withdrawals and replenishments of the special accounts, and extensive delays in audit report submissions); it is also a process in which the Ministry of Finance (MOF) is playing a greater and more direct role in overseeing and monitoring the portfolio. The August 1994 CPPR was followed by mini-CPPRs in March and July 1995; these were followed by a Project Implementation Workshop conducted over four days in November 1995 to address primarily the operational needs of project managers, accountants and supply officers working on Bank projects. This approach to resolving portfolio-wide implementation problems has been greatly facilitated by the creation in mid-1995 of the multi-sectoral Operations Unit (OU) in the Nairobi Resident Mission, which established capacity for day-to-day dialogue with Government and hands-on implementation assistance. The OU and the MOF now meet once a month to review the status of overall project implementation, to agree on additional steps to be taken with respect to previously identified generic problems, and to identify/resolve any project-specific implementation problems that arise.

3. Results have been encouraging. The Government's recently adopted improved budgetary allocation process which attempts to ensure that all "core" projects are fully funded, resulted in FY96 being the first year in which no projects in the IDA portfolio experienced physical implementation delays due to a lack of adequate budgetary allocations. The Government is currently finalizing the FY97 budget, including provisions for all Government "core" development projects (in the context of the ongoing joint Government/IDA public expenditure review). Sustaining this process of expenditure rationalization should eliminate what, in the past, has been the most serious problem in ensuring timely implementation under the Kenya portfolio.

4. With the exception of projects primarily in the social sector, extensively delayed procurement and improper procurement have not been a major implementation problem in the Kenya portfolio. Excessive delays in the payment of contractors/ suppliers, on the other hand, continue to occasionally surface as a concern, although much improvement has been made in this

area during the past year, with significant time reductions being achieved during the past year by the MOF and the Central Bank of Kenya (CBK) in processing PAs (payment authorities) under the special accounts as well as those for direct payments. Attention has more recently focused on individual implementing agencies/line ministries, on identifying the extent to which there may be excessive delays within the respective projects themselves concerning the processing of PAs, i.e., from the time of contractor/supplier invoice received until date PA is received by MOF, and specific actions to reduce such delays.

5. While increased attention is being given to the quality of accounts and how to use them more effectively as a management tool, timely preparation of accounts and timely audit of accounts still remains a problem. (It should be noted, however, that the quality of the audit reports themselves, most of which are done by the public auditor, is not an issue.) Still, the magnitude of the backlog of overdue audit reports is slowly being reduced - as of end-May, under the ongoing portfolio, there were only nine reports more than four months overdue. More reports are being submitted sooner (although still after the respective covenanted due date), in large part due to several ongoing initiatives: (i) the MOF (in particular, the Accountant General) is taking a major role in monitoring and overseeing the audit situation; (ii) there is a working group comprising the public auditor, the MOF and the OU, that, with expert consultant assistance, is developing a strategy and operational action plan to improve the quality and timeliness of accounts and audits; and (iii) the Department has been aggressive and consistent in applying remedies in those instances where audits are not received within a reasonable timeframe after becoming overdue. For example, in FY95, the SOE disbursement procedure was suspended under seven projects, total disbursements suspended under three projects and proposed amendment of legal documents has been conditional upon the receipt of any overdue audit reports under the respective project. At present, Board presentation is being made conditional upon receipt of all overdue audit reports for which the concerned accounts are the direct responsibility of the implementing agencies/line ministries under the proposed project.

6. As a result of these efforts, overall improvement in IDA's Kenya portfolio quality is being achieved. As of March 31, 1996, four of the 21 projects in the Kenya portfolio (or 19 percent) were rated "problem"; this compares with 33.3 percent (i.e., eight projects) for FY95 and 38.5 percent (i.e., ten projects) for FY94. These four problem projects are briefly discussed below:

Cr. 2110-KE (Fourth Population). Almost six years old and with 80 percent of credit proceeds remaining undisbursed, agreement would be reached with the Government during the next "health mission" on bringing this project to closure by its June 30, 1997 closing date. Implementation progress to-date has been extremely disappointing, despite a restructuring of this project in October 1993 to finance the purchase of drugs for the prevention of sexually transmitted infections (in addition to the project's main objective of increasing the availability, accessibility and quality of family planning services provided by the Government and NGOs). Major problems in procurement, due mainly to weaknesses in the tendering system of the Ministry of Health (MOH) and to irregularities and lapses in strictly adhering to IDA's procurement guidelines, remain - at the Bank's insistence, the Government has recently agreed to the hiring of a procurement agent for all ongoing projects involving this ministry.

Cr. 2440-KE (Parastatal Reform and Privatization TA). Originally intended as the engine for parastatal reform and privatization, the project's objectives and policy/implementation timetable as originally agreed have not been achieved. However, with the policy agenda for parastatal reform and privatization clearly defined under the recently agreed Policy Framework Policy for 1996-98 and the recently approved *Structural Adjustment Credit*, this project is now being formally restructured to support the reform implementation program set forth therein. Within this restructured project framework, implementation status would be re-evaluated later this year.

Cr. 2199-KE (Second National Agricultural Extension). Over five years old, with 70 percent of credit proceeds undisbursed and with disbursements under the credit recently suspended for noncompliance with audit covenants (i.e., outstanding SOE and project accounts audit reports more than 12 months overdue), this project is not expected to be completed by its closing date of March 31, 1998. By the end of September, the Bank and the Government would agree on a specific implementation program through end-June 1997 and reconfirm project outcomes/identify specific outputs to be achieved at the end of that period. Satisfactory resolution of outstanding audit and financial management issues related to the project, including the lifting of the suspension of disbursements, is critical to project implementation during the next fiscal year. Implementation progress during the next year will form the basis for proceeding with the project beyond end-FY97.

Cr. 2596-KE (Micro and Small Enterprise Training and Technology). Although the project implementation team is now finally in place (in February, almost two years after the project was approved) and a detailed implementation program agreed through the end of the year, it has been rated unsatisfactory until implementation progress is demonstrated. During the next nine months, supervision efforts will be intense, focusing closely on Government's commitment (i.e., actions) to improving the enabling environment for the jua kali (small enterprise) sector.

7. In addition to the above four rated "problem" projects, another four ongoing IDA projects are currently classified as slow disbursing operations, i.e., with disbursement lags of 50 percent or more (there are no operations

approved by the Board more than one year ago but not yet declared effective, nor are there any over-aged operations - the *Second Agricultural Sector Adjustment Operation, Cr. 2204-KE*, although under implementation for slightly more than five years, had a significant technical assistance component and will close on June 30, 1996):

Cr. 2309-KE (Universities Investment). Four-and-a-half years old and originally scheduled to close at end-1996, expenditures under this project are mostly for staff development and procurement of highly specialized equipment, mainly for science and engineering. Staff development has proceeded as intended. However, due to flawed application of procurement procedures during the early years of the project, equipment procurement had to be retendered, and the first fourteen equipment contracts were awarded only in the second half of 1995 - as such, 75 percent of credit proceeds are currently undisbursed. However, remaining Phase 1 and Phase 2 equipment tenders are to be advertised and awarded in 1996, and past procurement problems are not expected to reoccur. A one-year extension of the closing date was recently approved, and completion of the project by that date is now anticipated.

Cr. 2310-KE (Health Rehabilitation). Extensive delay in initiating the civil works for rehabilitation of Kenyatta National Hospital, which accounts for approximately 70 percent of credit proceeds under the project, is the primary reason for the current 70 percent disbursement lag. Commencement of this civil works component finally began in mid-1995, and this work is scheduled for completion by end-1996. No extension of the June 30, 1997 closing date is anticipated, and the next supervision mission will confirm with the Government, necessary arrangements for bringing the project to closure by that date.

Cr. 2333-KE (Second Mombasa and Coastal Water). Approved in February 1992, project implementation is about 15 months behind schedule, thus explaining the current disbursement lag of slightly more than 50 percent. Start-up was initially slow due to institutional weaknesses in the National Water Conservation and Pipeline Corporation (NWPC - the implementing agency) and delays in the selection of consultants. These initial delays were then followed by inadequate budgetary allocations (IDA proceeds as well as counterpart funding) in fiscal years 1993-95, resulting in further delays in physical implementation. This situation was further compounded by a seven-months' suspension of

disbursements in 1995 by the Bank, for failure by NWCPC to timely submit to the Bank a number of audit reports required under the project. However, with adequate budgetary allocations having been provided in FY96 (and a respective disbursement ratio of 40 percent for the year as of end-May), the project is expected to be completed by June 30, 1997 - one year later than originally scheduled. A one-year extension of the closing date would be agreed by the Bank, upon confirmation by the Government that adequate project funding has been provided in the FY97 budget to ensure that the FY97 workplan can be timely implemented.

Cr. 2686-KE (Sexually Transmitted Infections). An overoptimistic disbursement profile for the first (as well as second) year of project implementation, as assumed in the Staff Appraisal Report, compounded by delays in the establishment of a funding mechanism, acceptable to the Government, for disbursing credit proceeds to the participating NGOs and municipalities, explain the current disbursement lag of almost 80 percent. A task force comprising the MOH, MOF and the Bank is presently working on resolving this bottleneck. There have also been delays in the appointment of a procurement agent to carry out all procurement under the project; it is expected that a contract will be signed by early July 1996. However, even with implementation expected to proceed shortly, as originally envisaged, the original disbursement projections will continue to be reflected in a relatively high disbursement lag during the next two-to-three years.

STATUS OF BANK GROUP OPERATIONS IN TANZANIA

STATEMENT OF BANK LOANS AND IDA CREDITS

As of March 31, 1996

(US\$ millions)

Loan or Credit No.	Fiscal Year	Borrower	Purpose	(Less Cancellations)		Undis- bursed
				Bank	IDA	
Twenty-seven (27) Loans and seventy five (75) Credits closed, of which SECALS, SALs and Program Loans/Credits:				355.55	1,637.91	
					(795.42)	
Cr. 18910	1988	Tanzania	Agr. Exports Reh. I		30.00	11.79
Cr. 19700	1989	Tanzania	Nat'l. Ag. & Liv. Res.		8.30	3.05
Cr. 19940	1989	Tanzania	Agric. Ext.		18.40	2.50
Cr. 20500	1989	Tanzania	Tree Crops		25.10	8.91
Cr. 20950	1990	Tanzania	Ports Modernization		37.00	16.70
Cr. 20980	1990	Tanzania	Health & Nutrition		47.60	30.81
Cr. 21370	1990	Tanzania	Educ. Planning & Rehab.		38.30	23.80
Cr. 21490	1990	Tanzania	Roads I		180.40	68.59
Cr. 22020	1991	Tanzania	Petrol Rehab		44.00	44.88
Cr. 22670	1991	Tanzania	Railways Restructuring		76.00	59.66
Cr. 22910	1992	Tanzania	Urban Sector Eng.		11.20	2.30
Cr. 23300	1992	Tanzania	Engineering Credit		10.00	0.59
Cr. 23350	1992	Tanzania	Forest Resources Man		18.30	10.43
Cr. 24130	1993	Tanzania	Financial & Legal Ma		20.00	12.50
Cr. 24860	1993	Tanzania	Telecom III		74.45	66.60
Cr. 24890	1993	Tanzania	Power VI		200.00	133.43
Cr. 25070	1993	Tanzania	Priv. Pub. Sect. Mgt.		34.90	22.50
Cr. 25370	1994	Tanzania	ASMP		24.50	16.38
Cr. 25980	1994	Tanzania	Roads II		170.20	165.28
Cr. 26480	1995	Tanzania	Mineral Sector Dev.		12.50	10.97
Cr. 27710	1996	Tanzania	Financial Inst. Dev.		<u>10.90</u>	<u>10.93</u>
Total				355.55	2729.96	722.60
of which repaid				<u>296.91</u>	<u>89.21</u>	
Total held by Bank & IDA				<u>58.64</u>	<u>2640.75</u>	
Amount sold				6.29		
of which repaid				6.29		
Total Undisbursed						<u>722.60</u>

Tanzania
STATEMENT OF IFC INVESTMENTS
 As of March 31, 1996
 (In Millions US Dollars)

<u>Original Gross Commitments</u>						
Fiscal Years Committed	Obligor	Type of Business	IFC Loan	IFC Equity	Ptpnt.	Totals
1960	a/ Kilombero Sugar Company, Ltd.	Food and Agribusiness	4.66			4.66
1978	a/ Highland Soap and Allied Product	Manufacturing	1.38	0.37		1.75
1979	a/ Metal Products Limited	Manufacturing	1.33	0.18		1.51
1985	a/ Amboni Limited	Food and Agribusiness	4.38		0.99	5.37
1990	Tanganyika Sisal Spinning Comp	Food and Agribusiness	2.00			2.00
1991	Mufindi Tea Company Limited	Food and Agribusiness	2.80			2.80
1994	Nomad Safaris (Tanzania) Limite	Hotels and Tourism	0.15			0.15
1994	Tanganyika Bus Services Compan	Industrial and Consumer Ser	0.25			0.25
1994	Tourism Promotion Services (Tan	Hotels and Tourism	8.04	1.06		9.10
1995	Eurafrican Bank (Tanzania) Limit	Financial Services		0.73		0.73
1995	Moshi Leather Industries Limited	Manufacturing		0.25		0.25
1995	Raffia Bags Tanzania Limited	Manufacturing	0.50			0.50
1995	Tanzania Breeders and Feedmills	Food and Agribusiness	1.00			1.00
1995	Tanzania Breweries Limited	Food and Agribusiness	11.00	6.00	7.40	24.40
1995	Tanzania Leather Industries Ltd.	Manufacturing	1.00			1.00
1995	Tourism Promotion Services (Zan	Hotels and Tourism	1.25	0.16		1.41
1996	MIC Tanzania Ltd.	Infrastructure	1.00			1.00
	Total gross commitments b/		40.74	8.75	8.39	57.88
	Less cancellations, terminations, repayment & sales		14.52	0.55	0.99	16.06
	Total commitments now held c/		26.22	8.20	7.40	41.82
<hr/>						
<u>Pending Commitments</u>						
	A&K TANZANIA LTD		0.45			0.45
	AEF-ONE EARTH		0.70			0.70
	AEF-TRADECO		0.93			0.93
	AEF-ZAINAB GRAIN		1.00			1.00
	Eurafrican Bank (Tanzania) Limit	Financial Services			5.00	5.00
	ULC LEASING		5.00	0.97		5.97
	Total pending commitments		8.08	0.97	5.00	14.05
	Total commitments held and pending commitments		34.30	9.17	12.40	55.87
	Total undisbursed commitments		14.36	0.25	7.40	22.01

a/ Investments which have been fully cancelled, terminated, written-off, sold, redeemed or repaid.

b/ Gross commitments consist of approved and signed projects.

c/ Held commitments consist of disbursed and undisbursed investments.

TANZANIA - IMPLEMENTATION ISSUES

1. As of March 31, 1995, there were 21 ongoing projects in the Tanzania portfolio representing total commitments of US\$1.1 billion. Undisbursed amounts totaled \$723 million. Disbursements on investment projects have risen from US\$75 million in FY93 to US\$119 million in FY95. However, the disbursement ratio has not increased owing to the relatively large commitments on investment loans in FY93 and FY94. Because of no new adjustment lending due to the inadequate macroeconomic environment, disbursements for the balance of payments support were minimal in FY95.
2. Efforts were made to improve the management of IDA's portfolio in Tanzania. Three problem projects have been restructured, and mid-term reviews have been carried out for six projects. Several former problem projects are now rated as satisfactory (e.g. Health and Nutrition, Tree Crops, and Petroleum Rehabilitation). At present, there are five projects rated unsatisfactory: Education Planning, Roads I and II, Parastatal and Public Sector Reform Project and Agriculture Exports Rehabilitation Project. The AERP is being closed on June 30, 1996. A CPPR was held in May 1996, and a joint action program was agreed to help resolve generic implementation issues (e.g. availability of counterpart funds, project management staff and incentives, and accounts/auditing).
3. On audit compliance, some progress has been made in reducing the number and length of delayed audit reports. Following a firm stance, audit compliance improved, and audits that were particularly delayed were submitted.
4. Inadequate provision of counterpart funds has affected IDA-financed projects particularly in agriculture, roads and education. Given the continuing weak fiscal situation, the inadequacy of counterpart funds needs to be addressed by reducing the development project portfolio and focusing on high priority activities. IDA has assisted the Government in defining a core investment program, limited to high-priority projects which would get most of their funding requirements. The Government has made some progress in reducing the number of projects in the development budget and improving the budgetary allocation towards core projects. However, this approach has not been sufficient to ensure adequate levels of counterpart funding owing to the severity of the budget crisis.
5. An important area of work in improving the portfolio has been the incorporation of the findings from consultations with beneficiaries of IDA projects. For example, supervision of the research and extension projects has taken place in the framework of the Farming Systems Approach, involving researchers, extensionists, and farmers in joining identification of improvements in the design and implementation of research and extension activities. The efforts to restructure the health and education projects, and to redirect a portion of funds to support new approaches to the social sectors, were based on surveys of both individual and focus groups over the past year. To improve overall implementation, a study has been done to address procurement issues, under the Integrated Roads Project, which include changes in the procurement code, regulations and standard bidding documents. The study is currently being reviewed by the Government and IDA for follow up action. A country Procurement Assessment is planned for June/July 1996.
6. Five IDA projects are identified as slow disbursing operations with disbursement lags of about 50% or more: Health and Nutrition, Education Planning and Rehabilitation, Railways Restructuring, Roads II and Petroleum Sector Rehabilitation.

7. Tanzania Health and Nutrition Project was slow to start and consequently suffered from management problems in the first three years of its implementation. These initial problems were addressed by setting up project management offices for each of the two main components. However, since the project was managed by different ministries with project coordination offices in two different cities, the management problems continued to plague the project as it was difficult to coordinate their activities. This particular problem has now been solved by locating both offices in Dar Es Salaam. In addition, the project was also affected by the Government's inability to meet covenants which were tied to major activities such as rehabilitation works and pharmaceuticals. The project has now been restructured and is also supporting pilot-testing of innovative mechanisms of services delivery, e.g. community health trusts and facility-based management.

8. The implementation of Petroleum Sector Rehabilitation has been behind schedule by two years mainly due to the delay in the credit effectiveness (18 months), for which the major issues have now been resolved. The project restructuring was completed in November 1994. As for the issue of losses of petroleum products on transit by rail, the consultant study has been completed and an agreement was reached on the recommendations of the study. An action plan for the railway to establish common-carrier liability tariffs has been in progress.

9. The Education Planning and Rehabilitation Project suffered a slow start largely due to: (a) the complexity of the project design and management; (b) the changing policy environment; and (c) disagreements on the continued relevance of some components. The disbursements increasingly lagged behind during the first three years. However, several measures have now been taken to improve the situation. The project management has been strengthened by the recruitment of accounting specialists; plans for improved implementation and restructuring have been agreed and a number of concrete actions have been taken; communication with the Bank has now improved; and part of the undisbursed balance is being used to finance pilot activities in demand-side activities. As a result of these actions, activities and the pace of disbursements have picked up again, and the project performance will further improve during the remaining period of the project.

10. The Railway Restructuring Project had a slow start in disbursements, mainly due to the learning curve which the executing agency, TRC, had to go through. The pace picked up since July 1995, and the disbursements are expected to improve.

11. Implementation of Roads II project has been delayed, first by the delay in effectiveness (about 5 months) and second due to problems of counterpart funds and management weaknesses. To address these issues the Government has agreed to engage a project management consultant to review management systems and procedures, determine the physical and financial status of the projects (including that of the ongoing Roads I) and prioritize the outstanding activities. Pending completion of this exercise and agreement on improved management arrangements and systems the Government will not enter into new civil works contracts for IDA financing. As a result, disbursements are expected to remain slow for one to one and half years. Despite these problems, progress has been achieved in (i) improving both the level and rate of transfer of maintenance funds to the Regional Engineers' Offices; (ii) completing the transport sector administration studies which is providing the basis for restructuring the sector; and (iii) defining an action plan for restructuring road transport companies.

Schedule E
STATUS OF BANK GROUP OPERATIONS IN UGANDA
STATEMENT OF BANK LOANS AND IDA CREDITS
As of March 31, 1996
(US\$ millions)

Loan or Credit No.	Fiscal Year	Borrower	Purpose	(Less Cancellations)		Undis- bursed
				Bank	IDA	
Nine (9) Loans and forty eight (48) Credits closed, of which SECALs, SALs and Program Loans/Credits:				42.92	1257.92 (652.78)	10.19
Cr.21240	1990	Uganda	Water Supply II		60.00	40.65
Cr.21760	1991	Uganda	Livestock		21.00	13.86
Cr.21900 (S)	1991	Uganda	Ag. Sector Adj. Credit		100.00	4.80
Cr.22060	1991	Uganda	Urban I		28.70	14.18
Cr.22680	1991	Uganda	Power III		125.00	81.51
Cr.23150	1992	Uganda	Enterprise Development		41.85	32.76
Cr.23620	1992	Uganda	Northern Reconstruct.		71.20	40.75
Cr.24180	1993	Uganda	Econ. & Financial Management		29.00	7.64
Cr.24240	1993	Uganda	Agric. Extension Prog.		15.79	7.02
Cr.24460	1993	Uganda	Agric. Res. & Trg.		25.04	15.30
Cr.24930	1993	Uganda	Primary Educ.		52.60	39.41
Cr.24960 (S)	1993	Uganda	Financial Sector Adjustment Cr.		100.00	51.83
Cr.25830	1994	Uganda	Small Towns Water		42.30	41.66
Cr.25870	1994	Uganda	Transport Rehab.		75.00	76.12
Cr.26030	1994	Uganda	Sexual Trans. Infections		50.00	49.41
Cr.26090	1994	Uganda	Cotton Sector Development		14.00	12.00
Cr.26790	1995	Uganda	District Health		45.00	44.25
Cr.27360	1995		Inst. Capacity Building		36.40	35.07
Cr.27770	1996		Environment Management		11.80	10.93
Cr.27980	1996		Private Sector Comp.		<u>12.30</u>	<u>12.10</u>
Total				42.92	2214.90	631.25
of which repaid				<u>42.92</u>	<u>52.27</u>	
Total held by Bank & IDA				<u>0.00</u>	<u>2162.63</u>	
Amount sold 25.82						
of which repaid 25.82						
TOTAL Undisbursed						<u>641.44</u>

(S) Indicates SAL/SECAL or Program Loan/Credit.

Uganda
STATEMENT OF IFC INVESTMENTS
 As of March 31, 1996
 (In Millions US Dollars)

Fiscal Years Committed	Obligor	Type of Business	Original Gross Commitments				Held by IFC	Held by Ptpnt.	Undiab incl. Ptpnt.
			IFC Loan	IFC Equity	Ptpnt.	Totals			
1965	a/ Mulco Textiles, Ltd.	Textiles	2.26	0.54	0.70	3.50			
1972	a/ Tourism Promotion Services (Uga	Hotels and Tourism	0.73		0.38	1.11			
1984	Sugar Corporation of Uganda Lim	Food and Agribusiness	8.00			8.00	6.00		
1984	a/ The Toro and Mityana Tea Comp	Food and Agribusiness	1.12		0.50	1.62			
1985	a/ Uganda Tea Corporation Limited	Food and Agribusiness	2.81			2.81			
1985/93	Development Finance Company o	Financial Services		0.98		0.98	0.98		
1993	Clovergem Fish and Foods Limite	Food and Agribusiness	0.85			0.85	0.78		
1993	Jubilee Insurance Company Ugan	Financial Services		0.10		0.10	0.10		
1993	a/ Nge-ge Limited	Food and Agribusiness	0.65			0.65			
1993	Nile Roses Ltd.	Food and Agribusiness	0.30			0.30	0.26		
1994	Rwenzori Properties Limited	Industrial and Consumer Ser	0.81	0.19		1.00	1.00	0.05	
1994	Skyblue Apart-Hotel	Hotels and Tourism	0.51			0.51	0.51	0.51	
1995	Clovergem Celtel Limited	Infrastructure	4.96	0.64		5.60	5.60	1.20	
1995	Polypack Limited	Manufacturing	1.00			1.00	1.00		
1995	Rainbow International School Ka	Industrial and Consumer Ser	0.79			0.79	0.79	0.31	
1995	Uganda Leasing Company Limite	Financial Services		0.33		0.33	0.33		
	Total gross commitments b/		24.79	2.78	1.58	29.15			
	Less cancellations, terminations, repayment & sales		9.68	0.54	1.58	11.80			
	Total commitments now held c/		15.11	2.24		17.35	17.35	2.07	
Pending Commitments									
	AEF GOVINDA KIRI		0.23			0.23			
	AEF-AGRO MGMT		0.60	0.40		1.00			
	EAGW		6.50			6.50			
	Total pending commitments		7.33	0.40		7.73			
	Total commitments held and pending commitments		22.44	2.64		25.08			
	Total undisbursed commitments		2.07			2.07			

a/ Investments which have been fully cancelled, terminated, written-off, sold, redeemed or repaid.

b/ Gross commitments consist of approved and signed projects.

c/ Held commitments consist of disbursed and undisbursed investments.

Uganda: Implementation Issues

1. The IDA portfolio for Uganda as of March 31, 1996 consists of 20 projects, with a total commitment of about US\$957 million, with an undisbursed amount of about US\$631 million. The portfolio showed improvement in FY95, largely as a result of intensified effort by GOU and Bank staff to remove the obstacles to project implementation. Disbursements have increased steadily in recent years from US\$135 million in FY1993, US\$165 million in FY94 to US\$193 million in FY95 and as of March 31, 1996, \$133 million has already been disbursed.
2. IDA's Uganda portfolio showed solid improvement in FY95, thereby continuing the trend of the last few years. This is a real improvement and does not represent any relaxation in ratings: in fact, task managers and country teams have become more rigorous in assessing project performance in the past couple of years. It is the result of an intensified effort to resolve some of the obstacles to project implementation and therefore to get better results in the field.
3. On slow disbursing operations, the Second Water Supply Project, FY90, has only disbursed 38% of the US\$60 million Credit; the procurement process for major civil works under the project was delayed as the procurement documentation had to be revised in order to comply with Bank procurement guidelines and procedures. In addition, procurement of major works for the Kampala sewerage system was postponed in order to gather more information before International Competitive Bidding was instituted. Although construction activities under three of the four civil works contracts have gained momentum, progress is still slow. However, the project's implementation performance has now become satisfactory, and the project meets its development objectives in many respects.
4. On the Transportation Rehabilitation Project, there was a 15-month delay in procurement activities/selection of consultants related to the main roads component (a major component of this project), primarily due to lack of familiarity (and therefore non-compliance) with Bank procurement procedures, on the part of project staff. In addition, there is a cost overrun (above the appraisal estimate) of about US\$13 million (or 17% of IDA financed portion of the project), for the three main roads contracts. However, the Borrower has been asked to propose a solution, which may call for restructuring or cancellation of some of the lesser priority components at mid-term review, early next year (1997). Training of Borrower staff in contract administration and procurement is being undertaken, with a view to enhancing their skills. Additionally, a twinning arrangement with the Finland Road Authority is being put in place. At this time, steps have been taken to resolve the major procurement issues and the project's disbursement performance is expected to improve over the next few months.
5. The Power III Project has disbursed some 32% of the US\$ 125 million (SDR 86.9 million) Credit. Project effectiveness was delayed by about one year to October 1992, as a result of delays in fulfilling the Conditions of Effectiveness. Thereafter, delays in meeting disbursement conditionality has contributed to the slow disbursements under the project. In order to ensure that the over 40 year old existing dam is adequately investigated and strengthened, the project provides for IDA financing to be initially limited to only the advance payment to the main civil work contract -which has been done- and withholding further disbursements until an adequate work program and associated bidding documents required to ensure the safety of the dam have been produced. This work program and the associated bidding documents are planned to be completed by mid-1996; meanwhile the African

Development Bank has been disbursing alone to avoid disruption of construction of the Owen Falls Extension Project.

6. The effectiveness of Livestock Services Project was delayed because of complexities in project design. Implementation was also affected by the reorganization of the Ministry of Agriculture, Animal Industry, and Fisheries, which included the consolidation of crop and livestock extension, and subsequently the Government's decentralization program, involving a transfer of responsibilities to districts. Because of slow progress from that point, the project was classified as non-core for FY94 and received no budget funds. The project was then restructured and progress has been satisfactory since the restructuring was put into effect.

7. On Sexually Transmitted Infections Project, the disbursement lag was due to problems experienced in procurement. The bulk of the project finances drugs and condoms and since the credit became effective in July 1994, the Ministry of Health has been struggling to procure drugs and condoms. The problems are already being addressed; a team of Ugandan officials visited Washington in January to discuss outstanding issues on the number of tenders which were under review and to clarify IDA procurement rules. IDA is also making arrangements to provide them with a pharmaceutical procurement expert to help prepare procurement for the next two years.

8. The District Health Project became effective in July, 1995. This project supports delivery of health services with the Districts taking more direct responsibility for service management. This is in line with the Government's decentralization policy. Actual implementation of the project was delayed by the need to prepare districts to take on new responsibilities. The time required for strengthening the capacity of the districts to plan and manage their resources was underestimated. It has taken much longer to put in place accounting and management systems. It was assumed that the districts would be able to prepare good workable budget plans as a basis of their implementation by July, 1995 but was only submitted in December 1995. Implementation has now started and disbursement performance is expected to pick up.

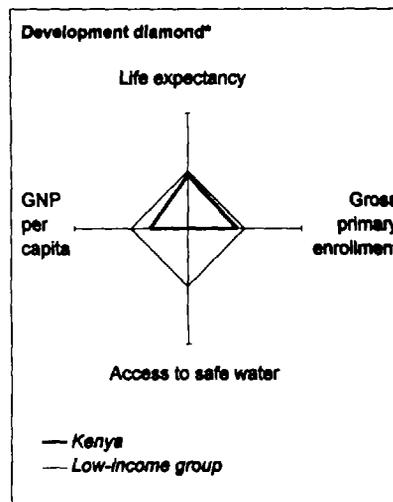
9. The Small Towns Water and Sanitation Project was approved by the Board in February 1994, but did not become effective until August 1995 after changing the one remaining condition of effectiveness into a condition of disbursement. Project implementation started only in November/December 1995 after the conditions of disbursement were met. This amounted to a 17-month delay in getting started especially because of delays in establishing the legal framework for the water committees, and settlement by the Government of all its overdue debts to NWSC. In this interval, considerable start-up work was nevertheless carried out in the form of pilot activities in two of the 10 towns, funded through the remaining portions of PPF, a Japanese PHRD Grant, and a component of the First Urban Project. The implementation is now proceeding rapidly, with consulting firms for both major project components in place and tendering for a number of other items in progress. The Project Launch Workshop was held in March 1996.

10. Institutional Capacity Building Project was approved by the Board in June 1995 and became effective in August 1995. There were initial delays in procurement process. Actions to initiate procurement of goods and consultancy services have now been undertaken and are expected to redress the disbursement lag.

Kenya at a glance

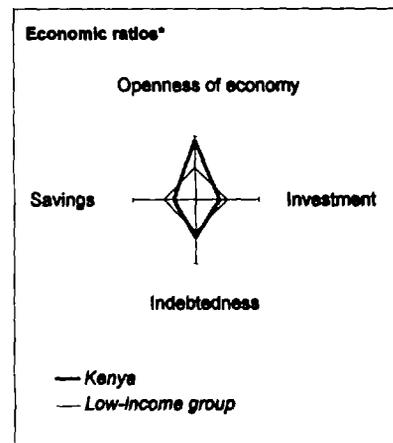
POVERTY and SOCIAL

	Kenya	Sub-Saharan Africa	Low-income
Population mid-1994 (<i>millions</i>)	28.0	572	3,182
GNP per capita 1994 (<i>US\$</i>)	260	500	390
GNP 1994 (<i>billions US\$</i>)	6.8	286	1,241
Average annual growth, 1990-94			
Population (%)	2.7	2.7	1.8
Labor force (%)	3.4	2.8	1.9
Most recent estimate (latest year available since 1989)			
Poverty: headcount index (% of population)	37	..	..
Urban population (% of total population)	28	31	28
Life expectancy at birth (years)	59	52	63
Infant mortality (per 1,000 live births)	58	92	68
Child malnutrition (% of children under 5)	23	..	38
Access to safe water (% of population)	..	..	67
Illiteracy (% of population age 15+)	22	..	35
Gross primary enrollment (% of school-age population)	91	71	105
Male	92	77	112
Female	91	64	98



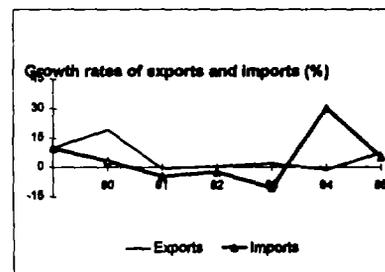
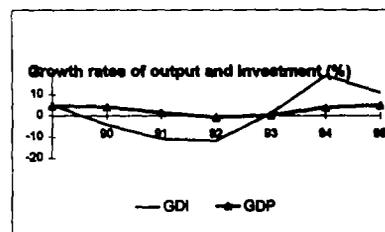
KEY ECONOMIC RATIOS and LONG-TERM TRENDS

	1975	1985	1994	1995	
GDP (<i>billions US\$</i>)	3.3	6.1	6.9	7.9	
Gross domestic investment/GDP	18.1	28.0	20.9	22.9	
Exports of goods and non-factor services/GDP	29.8	25.3	38.6	37.0	
Gross domestic savings/GDP	13.5	24.9	23.7	21.7	
Gross national savings/GDP	9.2	22.6	20.4	18.7	
Current account balance/GDP	-8.6	-7.0	-0.4	-4.2	
Interest payments/GDP	1.4	2.7	4.3	..	
Total debt/GDP	39.8	68.1	106.0	..	
Total debt service/exports	14.9	39.2	33.3	..	
Present value of debt/GDP	..	..	75.1	..
Present value of debt/exports	..	..	193.3	..
(average annual growth)					
GDPmp	4.8	3.3	3.9	5.0	5.3
GNP per capita	1.1	0.1	3.1	3.7	2.9
Exports of goods and nfs	0.3	5.1	-1.3	7.5	3.5



STRUCTURE of the ECONOMY

	1975	1985	1994	1995
(% of GDP)				
Agriculture	34.2	32.5	29.1	..
Industry	20.2	19.1	17.4	..
Manufacturing	12.0	11.7	10.5	..
Services	45.8	48.4	53.5	..
Private consumption	68.2	57.6	61.5	61.8
General government consumption	18.3	17.5	14.7	18.8
Imports of goods and non-factor services	34.5	26.4	35.7	38.2
(average annual growth)				
Agriculture	3.8	1.7	3.1	..
Industry	4.8	3.5	2.0	..
Manufacturing	6.3	4.3	1.9	..
Services	6.0	4.3	3.3	..
Private consumption	3.3	3.6	10.3	0.7
General government consumption	4.3	5.5	8.6	10.3
Gross domestic investment	1.8	0.4	18.7	10.9
Imports of goods and non-factor services	-3.7	4.7	30.3	5.3
Gross national product	5.0	3.0	5.8	6.4



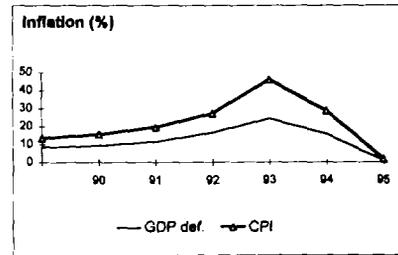
Note: 1995 data are preliminary estimates. Figures in *italics* are for years other than those specified.

* The diamonds show four key indicators in the country (in **bold**) compared with its income-group average. If data are missing, the diamond will be incomplete.

Kenya

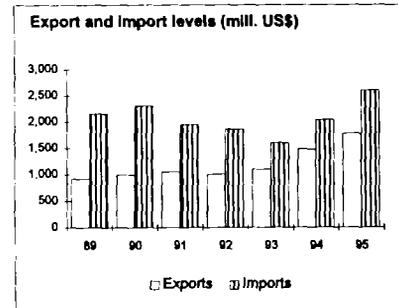
PRICES and GOVERNMENT FINANCE

	1975	1985	1994	1995
Domestic prices				
<i>(% change)</i>				
Consumer prices (Ave. Nairobi CPI)	19.1	10.7	28.8	1.7
Implicit GDP deflator	11.3	8.2	15.7	0.9
Government finance (in fiscal years)				
<i>(% of GDP)</i>				
Current revenue	..	21.6	29.2	31.7
Current budget balance	..	-0.8	-1.0	5.2
Overall surplus/deficit (on commitment basis and excl. grants)	..	-7.5	-8.0	-2.6



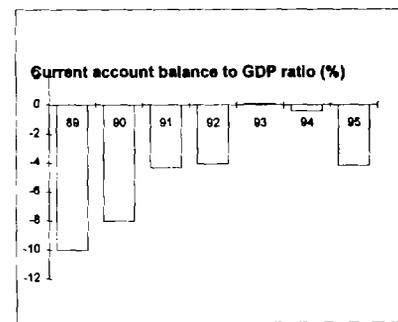
TRADE

	1975	1985	1994	1995
<i>(millions US\$)</i>				
Total exports (fob)	..	940	1,482	1,783
Fuel	..	118	65	73
Coffee	..	281	233	302
Manufactures	..	117	159	184
Total imports (cif)	..	1,486	2,044	2,606
Food	..	112	180	205
Fuel and energy	..	461	332	329
Capital goods	..	340	503	578
Export price index (1987=100)	..	90	122	..
Import price index (1987=100)	..	81	77	..
Terms of trade (1987=100)	..	111	157	..



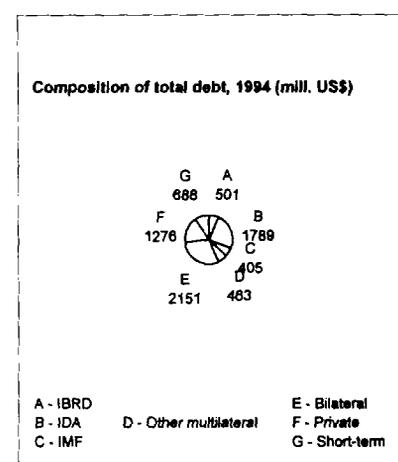
BALANCE of PAYMENTS

	1975	1985	1994	1995
<i>(millions US\$)</i>				
Exports of goods and non-factor services	955	1,552	2,645	2,954
Imports of goods and non-factor services	1,131	1,850	2,448	3,053
Resource balance	-176	-297	197	-99
Net factor income	-93	-213	-374	-365
Net current transfers	-13	81	148	128
Current account balance, before official transfers	-281	-429	-30	-336
Financing items (net)	244	397	134	203
Changes in net reserves	38	33	-104	133
Memo:				
Reserves including gold (mill. US\$)	173	417	625	453
Conversion rate (local/US\$)	7.3	16.4	56.1	51.0



EXTERNAL DEBT and RESOURCE FLOWS

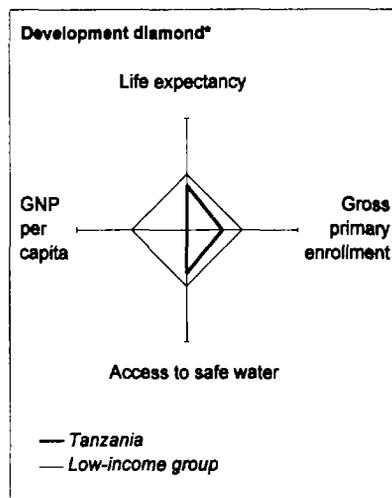
	1975	1985	1993	1994
<i>(millions US\$)</i>				
Total debt outstanding and disbursed	1,290	4,178	7,120	7,273
IBRD	106	751	566	501
IDA	81	408	1,631	1,789
Total debt service	151	621	627	888
IBRD	6	85	156	155
IDA	1	5	19	21
Composition of net resource flows				
Official grants	31	195	292	311
Official creditors	87	135	142	66
Private creditors	33	8	-37	-276
Foreign direct investment	17	18	2	4
Portfolio equity	0	0	0	0
World Bank program				
Commitments	219	6	92	64
Disbursements	51	113	226	97
Principal repayments	1	35	108	115
Net flows	50	77	119	-18
Interest payments	6	55	67	62
Net transfers	44	22	52	-79



Tanzania at a glance

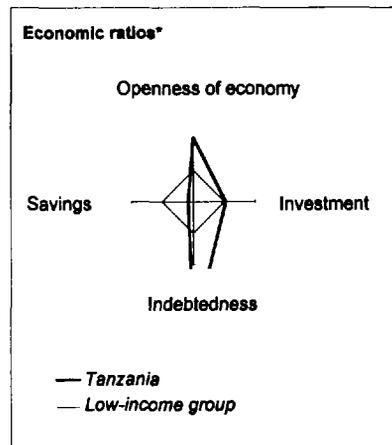
POVERTY and SOCIAL

	Tanzania	Sub-Saharan Africa	Low-Income
Population mid-1994 (millions)	28.8	565	3,176
GNP per capita 1994 (US\$)	..	510	390
GNP 1994 (billions US\$)	..	288	1,239
Average annual growth, 1990-94			
Population (%)	2.9	2.9	1.8
Labor force (%)	3.0	2.7	1.8
Most recent estimate (latest year available since 1989)			
Poverty: headcount index (% of population)	50	..	..
Urban population (% of total population)	23	28	28
Life expectancy at birth (years)	52	52	65
Infant mortality (per 1,000 live births)	84	94	53
Child malnutrition (% of children under 5)	28	..	38
Access to safe water (% of population)	52	..	67
Illiteracy (% of population age 15+)	32	50	41
Gross primary enrollment (% of school-age population)	68	68	106
Male	69	77	112
Female	67	62	100



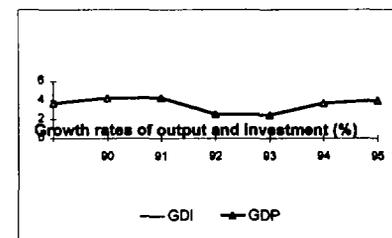
KEY ECONOMIC RATIOS and LONG-TERM TRENDS

	1975	1985	1994	1995	
GDP (billions US\$)	..	5.5	3.4	3.7	
Gross domestic investment/GDP	..	17.7	31.3	31.0	
Exports of goods and non-factor services/GDP	..	7.7	23.8	28.0	
Gross domestic savings/GDP	..	8.7	3.3	4.7	
Gross national savings/GDP	..	9.8	12.0	9.1	
Current account balance/GDP	..	-9.3	-22.6	..	
Interest payments/GDP	..	0.5	1.8	..	
Total debt/GDP	..	76.1	220.3	..	
Total debt service/exports	7.3	38.8	20.4	..	
Present value of debt/GDP	198.0	..	
Present value of debt/exports	782.6	..	
(average annual growth)					
GDP(at market prices)	..	4.0	3.7	4.0	4.8
GNP per capita
Exports of goods and nfs



STRUCTURE of the ECONOMY

	1975	1985	1994	1995
(% of GDP)				
Agriculture	..	52.1	56.9	56.8
Industry	..	12.0	16.8	16.8
Manufacturing	..	7.9	7.8	7.8
Services	..	35.9	26.3	26.3
Private consumption	..	74.9	88.4	85.1
General government consumption	..	16.4	8.3	10.3
Imports of goods and non-factor services	..	16.8	51.8	54.4
(average annual growth)				
Agriculture	..	5.4	3.5	4.0
Industry	..	6.8	2.9	4.3
Manufacturing	..	2.8	-0.9	4.5
Services	..	1.3	4.1	4.1
Private consumption
General government consumption
Gross domestic investment
Imports of goods and non-factor services
Gross national product	..	4.1	4.9	..



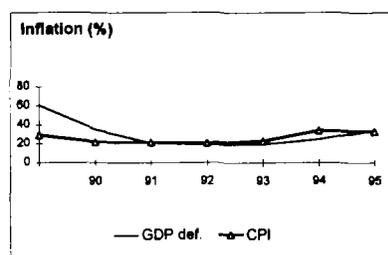
Note: 1995 data are preliminary estimates.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

Tanzania

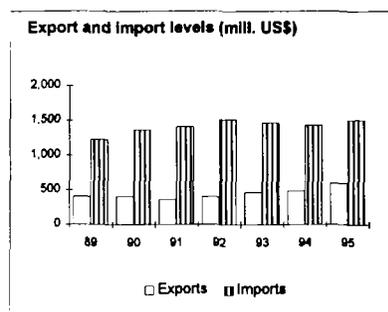
PRICES and GOVERNMENT FINANCE

	1975	1985	1994	1995
Domestic prices				
<i>(% change)</i>				
Consumer prices	26.1	33.3	34.1	32.9
Implicit GDP deflator	..	27.7	25.0	34.0
Government finance				
<i>(% of GDP)</i>				
Current revenue	..	18.5	15.0	14.8
Current budget balance	..	-2.3	-3.4	-4.2
Overall surplus/deficit	..	-7.8	-8.0	-11.4



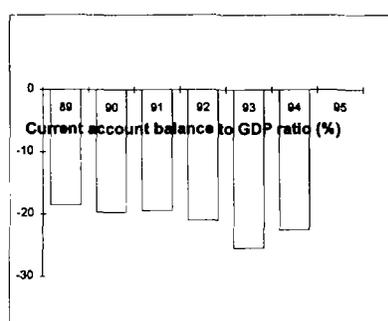
TRADE

	1975	1985	1994	1995
<i>(millions US\$)</i>				
Total exports (fob)	..	326	486	600
Coffee	..	119	115	166
Cotton	..	27	105	144
Manufactures	..	33	77	82
Total imports (cif)	..	999	1,436	1,503
Food	..	78	128	137
Fuel and energy	..	223	149	155
Capital goods	..	434	656	695
Export price index (1987=100)	..	96	126	..
Import price index (1987=100)	..	85	122	..
Terms of trade (1987=100)	..	113	103	..



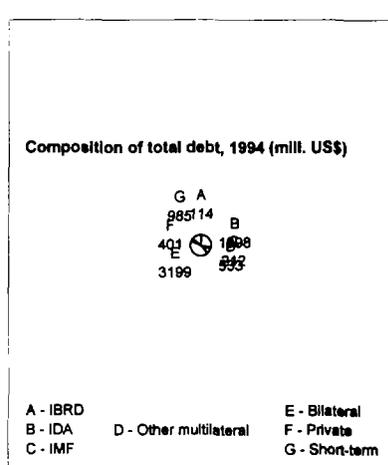
BALANCE of PAYMENTS

	1975	1985	1994	1995
<i>(millions US\$)</i>				
Exports of goods and non-factor services	482	445	848	1,025
Imports of goods and non-factor services	811	1,016	1,913	1,987
Resource balance	-329	-571	-1,065	-962
Net factor income	-3	-93	-147	-138
Net current transfers	12	148	450	437
Current account balance, before official transfers	-321	-516	-762	-663
Financing items (net)	306	531	752	623
Changes in net reserves	15	-14	10	40
Memo:				
Reserves including gold (mill. US\$)	65	16	306	249
Conversion rate (local/US\$)	..	17.9	477.6	624.1



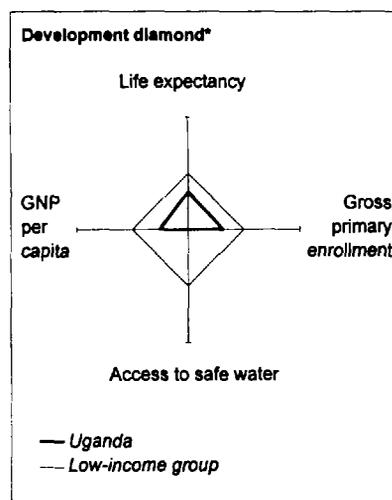
EXTERNAL DEBT and RESOURCE FLOWS

	1975	1985	1993	1994
<i>(millions US\$)</i>				
Total debt outstanding and disbursed	1,264	4,127	6,963	7,442
IBRD	80	266	140	114
IDA	81	568	1,759	1,998
Total debt service	36	181	172	172
IBRD	5	40	45	42
IDA	3	7	23	25
Composition of net resource flows				
Official grants	128	267	786	564
Official creditors	248	55	95	160
Private creditors	5	46	34	12
Foreign direct investment	..	..	62	63
Portfolio equity	0	0	0	0
World Bank program				
Commitments	40	8	334	183
Disbursements	60	83	146	183
Principal repayments	3	27	42	43
Net flows	57	56	104	140
Interest payments	5	20	26	24
Net transfers	52	36	78	116



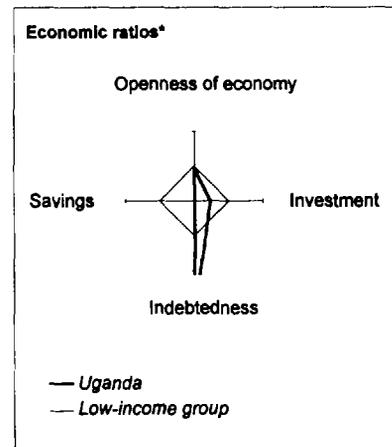
Uganda at a glance

POVERTY and SOCIAL	Uganda	Sub-Saharan Africa	Low-income
	Population mid-1994 (millions)	18.8	565	3,176
GNP per capita 1994 (US\$)	200	510	390
GNP 1994 (billions US\$)	3.7	288	1,239
Average annual growth, 1990-94			
Population (%)	3.2	2.9	1.8
Labor force (%)	2.9	2.7	1.8
Most recent estimate (latest year available since 1989)			
Poverty: headcount index (% of population)	55	..	..
Urban population (% of total population)	13	28	28
Life expectancy at birth (years)	43	52	65
Infant mortality (per 1,000 live births)	122	94	53
Child malnutrition (% of children under 5)	23	..	38
Access to safe water (% of population)	..	..	67
Illiteracy (% of population age 15+)	52	50	41
Gross primary enrollment (% of school-age population)	67	68	106
Male	74	77	112
Female	59	62	100



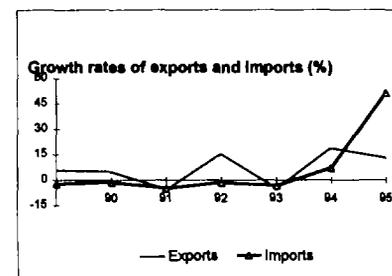
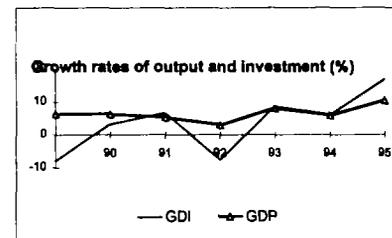
KEY ECONOMIC RATIOS and LONG-TERM TRENDS

	1975	1985	1994	1995	
GDP (billions US\$)	..	3.5	4.0	5.2	
Gross domestic investment/GDP	7.6	9.0	14.5	14.0	
Exports of goods and non-factor services/GDP	8.2	13.8	8.2	11.7	
Gross domestic savings/GDP	5.5	7.1	4.1	-0.6	
Gross national savings/GDP	5.4	6.7	10.1	5.7	
Current account balance/GDP	..	-2.5	-6.6	-8.4	
Interest payments/GDP	..	0.5	0.8	..	
Total debt/GDP	..	35.5	86.8	..	
Total debt service/exports	6.6	38.8	44.1	..	
Present value of debt/GDP	..	..	52.0	..
Present value of debt/exports	..	..	604.2	..
(average annual growth)					
GDP	..	5.8	6.0	10.4	3.3
GNP per capita	..	2.6	2.6	7.6	-0.3
Exports of goods and nfs	..	4.3	18.8	12.9	6.0



STRUCTURE of the ECONOMY

(% of GDP)	1975	1985	1994	1995
Agriculture	72.2	52.7	49.4	48.8
Industry	8.2	9.8	13.9	13.4
Manufacturing	6.3	5.8	6.5	6.3
Services	19.7	37.4	36.6	37.8
Private consumption	..	78.4	85.4	92.3
General government consumption	..	14.5	10.5	8.3
Imports of goods and non-factor services	10.3	15.7	18.6	26.3
(average annual growth)				
Agriculture	..	4.0	1.6	6.0
Industry	..	9.2	13.4	16.7
Manufacturing	..	9.5	15.2	17.7
Services	..	6.8	8.0	12.7
Private consumption	..	5.5	4.7	14.5
General government consumption	..	5.2	13.7	30.8
Gross domestic investment	..	6.5	6.2	16.9
Imports of goods and non-factor services	..	3.5	7.1	51.4
Gross national product	..	5.9	5.8	10.9



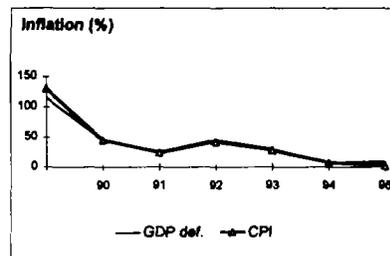
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Uganda

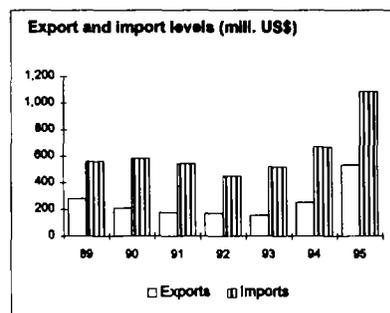
PRICES and GOVERNMENT FINANCE

	1975	1985	1994	1995
Domestic prices				
<i>(% change)</i>				
Consumer prices	..	105.3	7.8	2.9
Implicit GDP deflator	..	120.2	7.3	9.6
Government finance				
<i>(% of GDP)</i>				
Current revenue	..	9.1	8.3	9.9
Current budget balance	..	0.3	-0.6	0.6
Overall surplus/deficit	..	-4.3	-10.3	-7.0



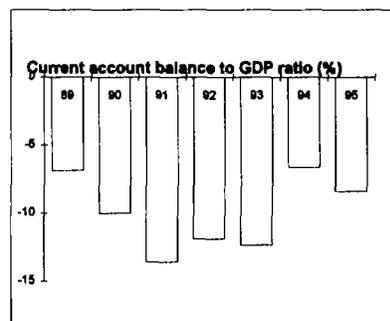
TRADE

	1975	1985	1994	1995
<i>(millions US\$)</i>				
Total exports (fob)	..	383	254	537
Coffee	..	353	172	408
Cotton	..	13	4	2
Manufactures
Total imports (cif)	..	404	672	1,088
Food	93	143
Fuel and energy	..	76	55	64
Capital goods	222	299
Export price index (1987=100)	..	103	46	81
Import price index (1987=100)	..	80	128	138
Terms of trade (1987=100)	..	129	36	59



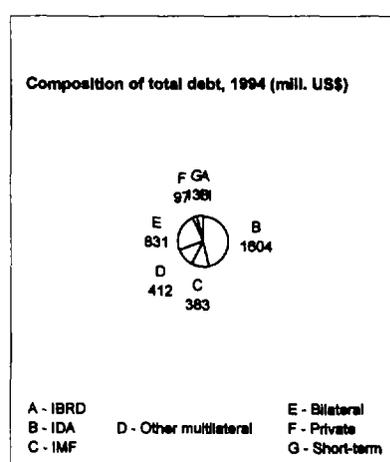
BALANCE of PAYMENTS

	1975	1985	1994	1995
<i>(millions US\$)</i>				
Exports of goods and non-factor services	248	408	333	609
Imports of goods and non-factor services	313	484	841	1,367
Resource balance	-65	-76	-508	-758
Net factor income	-4	-53	-61	-62
Net current transfers	-3	40	304	385
Current account balance, before official transfers	-72	-89	-265	-436
Financing items (net)	72	128	354	585
Changes in net reserves	0	-39	-90	-150
Memo:				
Reserves including gold (mill. US\$)	31	85	219	391
Conversion rate (local/US\$)	..	5.1	1,097.0	1,022.3



EXTERNAL DEBT and RESOURCE FLOWS

	1975	1985	1993	1994
<i>(millions US\$)</i>				
Total debt outstanding and disbursed	211	1,248	3,131	3,473
IBRD	4	37	16	11
IDA	40	285	1,327	1,604
Total debt service	17	158	165	152
IBRD	1	3	8	7
IDA	0	4	13	17
Composition of net resource flows				
Official grants	30	47	260	319
Official creditors	11	139	307	198
Private creditors	-3	4	-11	-16
Foreign direct investment	2	-4	3	5
Portfolio equity	0	0	0	0
World Bank program				
Commitments	0	45	193	268
Disbursements	3	92	139	222
Principal repayments	1	2	11	12
Net flows	2	90	128	210
Interest payments	1	4	11	12
Net transfers	2	86	118	198



PART II: TECHNICAL ANNEX

KENYA, TANZANIA, UGANDA

LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT

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LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT

1. BACKGROUND

A. THE MACROECONOMIES

Kenya

1.1 Kenya remains a low-income country. Even though its population growth rate, which historically has been very high (averaging 3.4 percent per annum as recently as 1987-91), dropped to about 3 percent in 1993, and although Kenya is one of the few countries in Africa that experienced a decline in fertility in the eighties (from 7.7 in the early 1980s to 5.2 in 1993), a significant and sustained increase in per capita income has proved to be an elusive goal in Kenya during the past decade. In spite of a few years of relatively good growth during the second half of the 1980s, the performance of the economy has been particularly inadequate in generating new jobs, and there has been no significant improvement in the incidence of poverty. Overall, the economy has generated only marginal increases in per capita output over the past decade; during the last four years, per capita income has actually declined - from \$340 in 1991 to \$260 in 1994 (at current prices and exchange rates).

1.2 The economy is heavily dependent on agriculture, which employs 70 percent of the labor force and contributes about one quarter of Gross Domestic Product (GDP). Coffee, tea and horticultural crops account for over 50 percent of merchandise exports. Between 1991 and 1993, Kenya's macroeconomic performance was poor. In April 1992, the Government agreed with the International Monetary Fund (IMF), on a program of actions necessary to re-establish a sound macroeconomic framework which included deficit reduction and liberalization of the foreign exchange regime. Until mid-1993, the implementation of the actions required was unsatisfactory: although fiscal targets were met, monetary targets were exceeded and the liberalization of the foreign exchange regime proved to be unsustainable.

1.3 Sustained Government effort since mid-1993 to tighten fiscal and monetary policy has resulted in effective economic stabilization and the revival of economic growth. The fiscal deficit (exclusive of grants) has been sharply reduced over two years from over 11 percent of GDP in FY93 to about 2.5 percent in FY95. Combined with a generally tight monetary stance, these policies have resulted in the reduction of inflation. Measured month over month, inflation peaked in January 1994 at 62 percent and declined steadily to 6.6 percent in December 1994. The three-month annualized inflation rate was reduced to 2.8 percent by the third quarter of 1995. Exchange rate movements, after the initial inflation-induced depreciation to KSh 82 per US dollar in June 1993, have reflected the interest rate response of short-term foreign capital flowing in and out of Kenya. High interest rates led to the capital inflows which contributed to a reserve accumulation and caused the shilling to appreciate to about KSh 45 per US dollar by October 1994. The recent decline in domestic interest rates and the subsequent capital outflow, as well as the gradual recovery of import demand, resulted in the

shilling depreciating in the second quarter of 1995 to about KSh 55 per US dollar where it has since stabilized. In parallel with the improvement in inflation has been a resumption of real economic growth. GDP growth (at factor cost) for 1994 is estimated at 3 percent, the first significantly positive growth in three years, and it was projected at around 5 percent for 1995.

1.4 Rising population pressures, migration and rapid urbanization have increased the need for urgent actions to address Kenya's environmental problems. The more critical problems are related to soil and land degradation, water resource management, biomass and household energy issues, and the protection and management of fragile ecosystems, including national parks. Rapid urbanization and inadequate physical planning have also caused a significant deterioration in the urban environment. The Government adopted a comprehensive National Environmental Action Plan (NEAP) in June 1994. The challenge since its completion has been to translate the NEAP's broad concerns about environmental management into an operational program of effective policy, legislative and institutional action. Areas for priority action include the development and adoption of a comprehensive environmental policy, the establishment of an effective institutional and legal framework, and the formalizing of a requirement for environmental impact assessments for all development projects.

Tanzania

1.5 By the early 1980s, Tanzania had come to be a heavily state-controlled economy, whose rigid economic system was battered by numerous shocks, and whose inadequate policies led to economic stagnation and a fall in per capita income lasting almost a decade. Beginning in 1986, the Government embarked on a program to reform and fundamentally change the existing approach to economic development by dismantling the system of pervasive economic controls and encouraging more active participation of the private sector in the economy. Structural reforms, particularly relating to traditional exports and the parastatal and financial sectors, were not fully completed, and macroeconomic stabilization remained elusive. Nevertheless, the economy responded well to the reforms that were implemented (notably, liberalization of food crop marketing and progressive improvements in foreign exchange management) and the accompanying increased availability of external resources. Official estimates indicate that GDP growth averaged about 4 percent per year and exports grew by more than 4 percent per year during 1986-94 (versus a 5 percent p.a. decline during 1979-85), with a marked increase in food production, increased sales of traditional exports, and a doubling in non-traditional agricultural exports since 1985.

1.6 Recent household surveys have shown that the adjustment program has been successful in reducing the incidence of poverty. The devaluation of the shilling and removal of restrictions on the marketing of food crops boosted production and incomes of smallholder agricultural families. The increased availability of consumer goods as a result of liberalization directly benefited the rural poor (as well as the urban poor who also benefited from increased supplies of food from liberalized agricultural marketing), and liberalization opened new earnings opportunities for rural women and for off-farm employment. Sample surveys for the preparation of a Poverty Profile suggest that the percentage of poor declined from about 70 percent of the rural population in the early

1980s to about 50 percent in the early 1990s. The liberalization program increased the access of small-scale enterprises to production inputs which facilitated expansion of low-wage employment in the informal sector.

1.7 Progress has been made in reforming the foreign exchange and trade systems over the last two years. Tanzania has moved to an interbank market and has abolished all export retention and import licensing, except for items related to health and national security. Excessive monetary expansion has been fueled by worsening fiscal management. The fiscal deficit (including grants) was about 6 percent of GDP in FY93 and 5 percent in FY94, after broadly balanced positions in the previous four years. This reflected widespread and increasing customs duty exemptions, an increasingly inefficient tax administration and the failure of the expenditure control system. Efforts are being made in the current fiscal year (among them a public sector hiring freeze, and reduced transfers to parastatals) to reduce the fiscal deficit below 4 percent of GDP. Inflation, which had accelerated above 25 percent p.a. is targeted by efforts to bring it down to 22 percent within the next fiscal year. Real GDP growth averaged about 3-4 percent per year during FY92 to FY94. Growth in FY94 was seriously compromised by weak economic management, and severe power shortages caused largely by less-than-average rainfall. These developments limited the scope for generating employment and, in particular, the high inflation rates resulting from macroeconomic mismanagement continue to erode the real incomes of the poor.

1.8 The recently completed National Environmental Action Plan focused on the need for action in the key areas of land degradation, water supply, environmental pollution, marine and freshwater resource management, habitat conservation and biodiversity, and deforestation. The action program for implementation includes revision of the legislative framework to enable local participation in environmental management more fully. Policies will support the environment in various ways, including applying the forest and wildlife protection acts; developing the means for assessing environmental quality, including water and air pollution; and strengthening environmental awareness programs. Some Government policies are oriented towards using incentives, such as implementing the new land policy to enhance the security of tenure; pricing policies for fuel, including oil; and water rights to encourage efficient use and environmentally sensitive practices.

Uganda

1.9 With a per capita income of about US\$200, Uganda is one of the poorest countries in the world. Its weak economy and poor social indicators are the legacy of nearly 15 years of political turmoil and economic decline. Since 1987 the Government has been implementing an economic reform program supported by a large number of donors. The program aims to promote prudent fiscal and monetary management, improve incentives to the private sector, reform the regulatory framework, and develop human capital through investment in education, health and other social services. Economic recovery and stabilization have been successful; hard-won macroeconomic stability has been maintained for the past three years. The stability is precarious, however; continuation of good policies and further improvement are therefore required.

1.10 A number of the structural reforms are now well advanced and appear to be accepted in Uganda. Nonetheless, the reform program has its detractors, and is still very fragile. Achieving higher investment, growth, and increased employment opportunities are critical for the sustainability of the program. Macroeconomic stability remains fragile also, notwithstanding the progress that has been made in curtailing public spending and strengthening the Shilling. With widespread poverty and massive unmet public needs, it will be difficult to maintain expenditure constraints. The key is to mobilize additional tax revenue, which is a very low proportion of GDP in Uganda. Doing so has not proven easy. A large part of the economy is in the informal sector and thus escapes taxation. Better tax administration, fewer exemptions and stronger enforcement can help in the short run, but any significant gains in revenue will come at best only in the medium-term. Uganda's current balance on the external account is also fragile. While internal price and exchange rate stability, together with good prospects for extended political calm, has generated a substantial inflow of private capital over the past several months, these flows could be reversed quickly if inflation or exchange rate volatility were to reappear. The dilemma facing policymakers is to get the economy moving ahead more rapidly, without generating inflation which could unravel the entire adjustment program.

1.11 Uganda's economic growth since 1987 has been good, but not spectacular. Real GDP grew by an average of 5.4 percent per annum from FY87 to FY93, a gain of about 2.5 percent per annum in per capita terms. To a large extent this growth was the result of bringing land and capital back into production, made possible by increased peace and security. More recently growth has also been fueled by some private investment and by the impact of trade, exchange rate and crop marketing liberalization. Preliminary indications are that real GDP rose by 5 percent in FY94, mainly due to strong performance by the manufacturing and construction sectors. The point has now been reached where further growth will depend on increased private investment.

1.12 The NEAP was approved by the Government in January 1994. The National Environmental Policy that was adopted subsequently calls for re-aligning sectoral development strategies so that they address priority environmental concerns relating to, among others, land degradation, deforestation, loss of wetlands, and dwindling fish stocks, several of which are directly related to environmental management of the Lake Victoria basin. The policy also emphasizes strategies cutting across sectors such as the need to control population growth and enhance security of land tenure. It also advocates environmental education and a system of environmental impact assessments as essential means of promoting rational resource use. The National Environmental Management Authority (NEMA) established recently will serve as the central policy advisory body on the environment, and coordinate implementation of the NEAP.

B. LAKE VICTORIA AND ITS SURROUNDS

Physical Description and Setting¹

1.13 Lake Victoria (Map Number IBRD 27780), with a surface area of 68,800 km² and an adjoining catchment of 184,000 km², is the world's second largest body of fresh water, and the largest in the developing world, second only to Lake Superior in size. Lake Victoria touches the Equator in its northern reaches, and is relatively shallow, reaching a maximum depth of about 80 m, and an average depth of about 40 m. The lake's shoreline is long (about 3,500 km) and convoluted, enclosing innumerable small, shallow bays and inlets, many of which include swamps and wetlands which differ a great deal from one another and from the lake itself. Because the lake is shallow, its volume is substantially less than that of other Eastern African lakes with much smaller surface area. Lake Victoria holds about 2,760 km³ of water, only 15 percent of the volume of Lake Tanganyika, even though the latter has less than half the surface area.

1.14 Some 85 percent of the water entering the lake does so from precipitation directly on to the lake surface, the remainder coming from rivers which drain the surrounding catchment. The most significant of these rivers, the Kagera, contributes roughly 7 percent of the total inflow, or one half of that over and above direct precipitation. The Kagera River, which rises in the highlands of Burundi and Rwanda, forms the border between Rwanda and Tanzania before turning to the east, and flows for at least 150 km completely in Tanzanian territory. It discharges into the lake just north of the border between Tanzania and Uganda. Some 85 percent of the water leaving the lake does so through direct evaporation from its surface, and the remaining 15 percent largely by way of the Victoria Nile, which leaves the lake near Jinja in Uganda, and flows via the Owen Falls, Lake Kioga, and the Murchison Falls to join the outflow from Lake Albert; these two outflows are the main sources of the "White Nile".

1.15 The lake's origins are still the subject of scientific dispute, but it seems likely that it is much more recent than the other great lakes of eastern Africa. Many of the rivers now flowing east into Victoria (including Kagera) once flowed west, at least in the Miocene, Pliocene, and part of the Pleistocene eras (within the past 2 million years), possibly eventually into the Nile system, and a more recent upthrust of the western side of the basin is thought to have reversed these rivers, and caused Lake Victoria to form by flowing eastwards. It is possible that the lake could have formed as recently as 25,000 to 35,000 years ago, and recent evidence suggests it may have dried up completely between 10,000 and 14,000 years ago.

Biological and Environmental Significance

1.16 Although there are many features of Lake Victoria which are of intense interest to biologists, it is fish that receive the most attention. Most of the fish species now in the

¹ Much of the information for the description of Lake Victoria and its workings was drawn from the following: Beadle, L.C., *The Inland Waters of Tropical Africa: An Introduction to Tropical Limnology*, Longman, London & New York, 1981, 475 pp.

lake also lived in the preceding, west-flowing rivers, but the *cichlids*, in particular, had a remarkable burst of speciation in response to the change from river to lake conditions. Similar things happened in the other great lakes, but in Lake Victoria it happened much more recently, more rapidly, and with, at first sight, fewer opportunities for ecological isolation in different types of habitat. The cichlids are capable of rapid genetic change, and more prone to speciation than other groups of African fish. There are more than 200 endemic species and 4 endemic genera of cichlids in Lake Victoria, more than 150 species of which are of the genus *Haplochromis*. Another major lineage is the tilapiines. From the primitive insect-eating types, mouths and pharynxes have evolved to allow feeding on plants, molluscs, fish, and even the eggs and young larvae carried in the mouths of brooding females of most cichlid species.

1.17 The non-cichlid fishes have also changed, and there are at least 50 species, of which 29 are endemic, and one endemic genus. The non-cichlids show much less divergence from the riverine stock than is the case with non-cichlid fish in Lake Tanganyika, which has had a much longer time for them to diversify. While most of the species remain year round in the lake, there are a number (at least 13 species) of anadromous (ascending) fish, especially cyprinids, characids and siluroids, which swim up the rivers when they are in flood, breed in a suitable place, and return with their young fish to the lake as the level drops.

Economic Significance

1.18 Kenya, Tanzania and Uganda control 6, 49, and 45 percent of the lake surface, respectively. The gross economic product of the lake catchment is in the order of US\$3-4 billion annually, and supports an estimated population of 25 million people at incomes in the range of US\$90-270 per capita p.a. The lake catchment thus provides for the livelihood of about one third of the combined populations of the three countries, and about the same proportion of the combined gross domestic product. With the exception of Kampala, the capital of Uganda, the lake catchment economy is principally an agricultural one, with a number of cash crops (including exports of fish) and a high level of subsistence fishing and agriculture. In Kenya and Uganda the areas of coffee and tea in the catchment are a significant part of those nations' major agricultural exports. The quality of the physical environment is therefore a fundamental factor in maintaining and increasing the living standards of the growing population. Although it is not possible to put a single estimate to the global value of the lake in sustaining the regional economy, it can be seen that if the deterioration of the lake resulted in a (say) 5 percent reduction in productivity of the region, the consequent loss would be of the order of US\$150 million annually.

C. MAJOR THREATS TO THE LAKE

1.19 The lake basin is used as a source of food, energy, drinking and irrigation water, shelter, transport, and as a repository for human, agricultural and industrial waste. With the populations of the riparian communities growing at rates among the highest in the world, the multiple activities in the lake basin have increasingly come into conflict. This has contributed to rendering the lake environmentally unstable. The lake

ecosystem has undergone substantial, and to some observers alarming changes, which have accelerated over the last three decades. Massive blooms of algae have developed, and come increasingly to be dominated by the potentially toxic blue-green variety. The distance at which a white disc is visible from the surface, (a transparency index measuring algal abundance), has declined from 5 metres in the early 1930s to one metre or less for most of the year in the early 1990s. Water-borne diseases have increased in frequency. Water hyacinth, absent as late as 1989, has begun to choke important waterways and landings, especially in Uganda. Overfishing and oxygen depletion at lower depths of the lake threaten the artisanal fisheries and biodiversity (over 200 indigenous species are said to be facing possible extinction). Scientists advance two main hypotheses for these extensive changes. First, the introduction of Nile perch as an exotic species some 30 years ago has altered the food web structure; second, nutrient inputs from adjoining catchments are causing eutrophication. Thus although the lake and its fishery show the evidence of the dramatic changes in the lake basin over the past century, the lake is not the source of the problem. The problems have arisen in the surrounding basins through human activity.

Lake Biota and Fisheries

1.20 One of the main events of importance to the lake system in the past thirty years was the introduction of new species of fish in the lake. The first were four species of tilapia (Cichlidae), which were introduced in the early 1950s. In 1955 the Nile Perch *Lates niloticus* (Centropomidae) was introduced into Lake Kioga, and when a few years later it was found in Lake Victoria, steps were taken to ensure its establishment there. Until 1978, Nile Perch remained a very small proportion of the commercial catch, less than 5 percent. Then in 1978 a very rapid expansion of the proportion accounted for by Nile Perch took place, with the result that by 1990 the commercial catch had a totally different composition, dominated by Nile Perch (almost 60 percent) and Omena (most of the remaining 40 percent). The haplochromines, and the mixture of other fish had virtually vanished from the commercial catch.²

1.21 It is important to note that the *size* of the fishery also exploded from 1978 on, perhaps by a factor of five or more. From Kenyan waters alone the recorded catch climbed from around 25,000 tons in 1978 to more than 175,000 tons in 1990. In the years preceding introduction of the Nile Perch, the total fisheries yield from the lake may have been in the vicinity of 100,000 tons, while in more recent years yields have been estimated in the range of 300,000 to 500,000 tons.³

² Data from Kaufman, Les, Catastrophic Change In Species-Rich Freshwater Ecosystems: The Lessons of Lake Victoria, Bioscience, Vol. 42, No. 11, December 1992, 846-858.

³ Data from Kitchell, James F., Richard Ogutu-Ohwayo, and Peter M. Reinthal, The Nile Perch in Lake Victoria: Interactions Between Predation and Fisheries, draft paper 1995, forthcoming in Eco. Appl.

Water Hyacinth

1.22 Water hyacinth (*Eichhornia crassipes*) is a flowering plant, whose origin is thought to be the Amazon areas of Brazil. It appeared in Lake Naivasha in Kenya in 1982, and in Lake Kioga in Uganda in 1988. In Tanzania, it was first reported in 1990. Its first recorded appearance in Lake Victoria was in Ugandan waters in 1988. Since then it has been reported in many locations, all around the lake, in the waters of all three riparian countries. It is especially concentrated in Ugandan waters, possibly because the prevailing southerly winds blow mats of the weed all the way from the mouth of the Kagera River, down which the mats flow from lakes far up in the catchments in Rwanda and Burundi. The hyacinth also flourishes in nutrient-rich waters, as those along the Uganda shoreline of the lake are believed to be. The area between Entebbe and the Uganda/Kenya border has widespread floating mats of water hyacinth, some of which reach more than 1,000 ha in size.

1.23 The main detrimental effects of the spreading mats of water hyacinth are as follows:

- (a) reduction in fish in the lake through de-oxygenation of water and reduction of nutrients in sheltered bays which are breeding and nursery grounds for fish, particularly tilapia;
- (b) physical interference with fishing operations, especially in the bays where fish are brought ashore to piers or landing beaches;
- (c) physical interference with commercial transportation services for people and goods on the lake;
- (d) physical interference with access to water supply from the lake, for both urban and rural communities, together with additions to the cost of purifying water with higher concentrations of suspended, decaying organic matter as a result of the hyacinth presence;
- (e) threats to the intakes at the Owen Falls hydroelectric power station in Uganda; and
- (f) provision of a preferred breeding habitat for the alternative host for Schistosomiasis (bilharzia), namely the *Biomphalaria* snail, a home for the vector mosquito for malaria, and a haven for snakes.

Eutrophication

1.24 Water quality in Lake Victoria has declined greatly in the past few decades, owing chiefly to eutrophication arising from increased inflow of nutrients into the lake. Nutrient inputs have increased two to three-fold since the turn of the century, mostly since 1950. Concentrations of phosphorus have risen markedly in the deeper lake waters, and nitrogen around the edges. Stimulated by these and other nutrients, the five-fold increase in algal growth since 1960, and the shift in its composition towards

domination by blue-green algae, is causing deoxygenation of the water, increased sickness for humans and animals drawing water from the lake, clogging of water intake filters, and increased chemical treatment costs for urban centers. Aside from the near-total loss of the deepwater species, the deoxygenation of the lake's bottom waters now poses a constant threat, even to fish in shallower portions of the lake, as periodic upwelling of hypoxic water causes massive fish kills. The increased nutrient loads have also spurred the water hyacinth infestations.

1.25 The nutrients represent a transfer of materials at an increasing rate from the terrestrial basin to the lake. Among others, these transfers comprise organic and inorganic suspended solids and dissolved nutrients carried by streams, terrestrial dust from wind erosion, inorganic compounds in the smoke produced by combustion (in cooking fires or forest burning), and direct additions along the lake shores of human and animal waste associated with domestic water use. Preliminary estimates suggest the increased nutrient inflows are coming largely from rural areas, but although the main causes of the eutrophication are known, the rates of enrichment, its sources, and its numerous effects are not well quantified. Since many of the farms in the area apply no fertilizers, or use very small quantities, these are not likely to be a major source of the nutrients, nor will they be until fertilizer application rates reach substantially higher levels than currently seen. Rather, the nutrients may be released from soil particles washed or blown off the land surface by erosion, from burning wood-fuels, and from human and animal waste from areas surrounding the lake. From the urban areas, the main source is untreated sewage, which beside providing additional nutrients, also increases the disease risk from water borne pathogens. Thus the water quality problems of the lake arise in the watershed, not in the lake, and it is in the catchment that the solutions must be found.

Water Pollution

1.26 Some areas of the rivers feeding the lake and the shoreline are particularly polluted by municipal and industrial discharges. Some information has been collected by local and national authorities on the scale and location of polluting industries, and there are a number of basic industries that are common to most of the major urban areas, for example, breweries, tanning, fish processing, agroprocessing (sugar, coffee) and abattoirs. Some of these have implemented pollution management measures but in general the level of industrial pollution control is low. Small scale gold mining is increasing, in Tanzania in particular, and this is leading to some contamination of the local waterways by mercury which is used to amalgamate and recover the gold. Some traces of other heavy metals, such as chromium and lead, are also found in the lake, although the problem has not yet reached major proportions.

2. STRATEGIC FRAMEWORK

A. PROJECT PREPARATION

2.1 Attempts at fisheries collaboration among Kenya, Tanzania and Uganda are among the oldest on the continent. As early as 1928, it was recommended that a unified lake-wide authority for regulation and for collection of fisheries statistics be set up. Establishment of the East African Freshwater Fisheries Research Organization (EAFPRO) in 1947 solidified collaboration, and it was boosted further with formation of the East African Community in 1967. In the early 1970s, all three countries became members of the FAO Committee for Inland Fisheries of Africa (CIFA). After the disappearance of this coordinating mechanism with the ending of the East African Community in 1977, the need for collaboration was felt so strongly that a special CIFA Sub-Committee for Lake Victoria was set up in 1980. Although this was a useful forum for the three countries, the difficulty of implementing management measures on a lake-wide basis due to the lack of a strong inter-governmental mechanism for harmonization of such measures, led to the design of proposals for the Lake Victoria Fisheries Organization (LVFO), whose establishment the current project would support. Most importantly, the current project would, for the first time, ensure that regional fisheries management would operate within a regional framework for environmental action, rather than having only a commercial orientation.

2.2 Each of the three riparian Governments has prepared a National Environmental Action Plan (NEAP). All three NEAPS acknowledge that Lake Victoria demands urgent attention through regional cooperation. The NEAPs focus on problems such as water pollution, biodiversity loss, land degradation, deforestation, and damage to wetlands, all central concerns for the lake and its catchments. Scientists and resource managers have increasingly warned that the absence of a regional management framework may threaten the future viability of the lake basin. Discussions to broaden regional environmental cooperation covering the Lake Victoria Basin started in late 1992. In May 1994 the three Governments decided to enter into an agreement jointly to prepare and implement a Lake Victoria Environmental Management Program. A Tripartite agreement to this effect was signed August 5, 1994. The essential soundness of this agreement has been proven during project preparation, and its main institutional arrangements, which have worked well, will continue into project implementation.

2.3 The Tripartite Agreement of 1994, as enhanced by the government preparation report, constitutes a framework for action fully responsive to the requirement for a Strategic Action Plan (SAP). This SAP, whose preparation included extensive stakeholder consultation, was reviewed thoroughly during appraisal. It identifies, acknowledges and analyzes the transboundary water-related environmental concerns which the three governments share in common. Furthermore, it expresses their determination jointly to build the capacity of existing institutions, and establish new ones, in order that they may adopt a comprehensive approach to addressing the shared transboundary concerns, and implement measures to deal with the priority concerns as identified, with a particular focus on community stakeholder involvement and measures to raise public awareness.

2.4 Preparation of the LVEMP took into account ongoing activities funded by the Global Environment Facility under the project Institutional Support for the Protection of East African Biodiversity (UNO/RAF/006/GEF), implemented by FAO and UNDP. The first phase of that project is coming to an end in 1996, just as the LVEMP commences implementation. The latter will build particularly on the wetlands components of the Institutional Support project, through which funds were provided to wetlands programs under the technical oversight of the IUCN (The World Conservation Union). These initiatives have established committees on wetlands in all three riparian countries, which would coordinate wetlands components under the LVEMP.

2.5 A large number of donors have supported a vast range of development initiatives in and around Lake Victoria. Some of these have addressed priority environmental concerns, but mostly in small, uncoordinated, and incomplete ways, and seldom with informed intentionality which had the wider environmental priorities in mind. In the absence of a coordinated management and information system for the entire lake and its ecosystem, these smaller projects have often fallen short, and continue to fall short, of realizing their maximum potential. Although often successful in their own terms, they could have achieved even more by being part of a coordinated management initiative to address the lake ecosystem and its problems. The current project is such a management initiative, which will lead to a quantum leap in understanding the ecosystem, and in devising sustainable management strategies.

B. THE LAKE VICTORIA REGION IN THE FUTURE

2.6 The Lake Victoria Environmental Management Project (LVEMP) will therefore become the heart of the wider investments needed in the lake basin in forthcoming years in direct actions to clean up the lake and its catchment, and manage the ecosystem in a sustainable way. Substantial investments will be needed in direct actions to reduce nutrient inflows from human waste (in both urban and rural areas), to decrease soil erosion, to clean up industrial effluent, and reduce pollution from all sources. The project will provide the information and build the capacity to coordinate the substantial sums likely to be available for financing these direct actions in the next five years and beyond. In the LVEMP itself an estimated 20 percent of project costs will be directed towards studies, 42 percent towards capacity building, and 38 percent towards direct actions.

2.7 A much broader program of investments in direct actions is already shaping up around the LVEMP, directed towards actions to improve human sanitation and reduce soil erosion in the lake basin. The bulk of these will take their cues from the early findings of the LVEMP. When these investments are included, the proportion of the program allocated for direct actions will increase markedly. Undoubtedly there will be substantial additional flows from other donors. The LVEMP mid-term update to the analysis of transboundary environmental concerns will guide the second phase of project implementation, and set the stage for subsequent initiatives. The Implementation Completion Report to be prepared by the three governments at the end of the LVEMP will include a revised Strategic Action Program outlining interventions needed to address priority problems. IDA will use this as the basis for seeking commitments to support such interventions from the wider donor community. Thus

the LVEMP will be the essential first step in a long-term program for restoring and sustaining the ecological foundations for economic development in the entire lake basin.

2.8 Furthermore, the LVEMP itself will include a study of potential sources of funding for continuing support of fisheries management, and other collaborative arrangements for sustaining the ecosystem established by the three riparian countries during this first phase. The study will assess possibilities for raising and coordinating levies on the commercial fisheries to enable some of the central monitoring and management initiatives to become fiscally sustainable. The LVEMP includes financial support for establishing a shared Levy Trust Fund among the three countries, should the study show this to be feasible.

2.9 The economy of the lake basin is based on agriculture (about 35 percent), lake fisheries (about 10 percent), industries and mining (about 15 percent) and the tertiary sector (about 40 percent). The structure of the economy will continue to change as the population grows, with livelihoods found increasingly in the secondary and tertiary sectors rather than the primary. There is considerable scope for increases in agricultural production, however, and especially in its value-added, as it is intensified and diversified into higher valued enterprises. Because of their size, a significant proportion of additional jobs will be found in agriculture and the fisheries for the foreseeable future. It is vital that the additional pressure this will put on the resource base is managed well, in order to head off increasing deterioration. The project aims at providing the foundation for this improved management, (and thus for sustainable development of the local economy), while the ancillary investments are regarded as vital to clean up the lake, and reduce nutrient and pollution inflows to within acceptable limits.

3. THE PROJECT

A. OBJECTIVES

3.1 The LVEMP is a comprehensive program aimed at rehabilitation of the lake ecosystem for the benefit of the people who live in the catchment, the national economies of which they are a part, and the global community. The program objectives are to: (a) maximize the sustainable benefits to riparian communities from using resources within the basin to generate food, employment and income, supply safe water, and sustain a disease-free environment; and (b) conserve biodiversity and genetic resources for the benefit of the riparian communities and the global community. In order to address the tradeoffs among these objectives which cut across national boundaries, a further project objective is to harmonize national management programs in order to achieve, to the maximum extent possible, the reversal of increasing environmental degradation.

B. GENERAL DESCRIPTION

3.2 The project is the first phase of a longer term program whose aims are as outlined above. The first phase will provide the necessary information to improve management of the lake ecosystem, establish mechanisms for cooperative management by the three countries, identify and demonstrate practical, self-sustaining remedies, while simultaneously building capacity for ecosystem management. The project will consist of two broad sets of activities. The first set of activities, which are designed to address specific environmental threats, will take place in a series of selected *pilot zones*. The second set of activities, which will improve information on the lake and build capacity for more effective management, will be of necessity *lake-wide* in scope.

3.3 In the *pilot zones*, the project would do the following in an integrated way: develop groundwater resources; conserve and develop wetlands; reduce sediment and nutrient flow, especially of phosphorus, into the lake; reduce fecal coliform and municipal nutrient output into the lake; regulate industrial effluent; define current contamination of fish and prevent any increase; stabilize the catch of Nile Perch, and increase the catch of indigenous species; increase incomes of local fisherfolk; and reduce water hyacinth to manageable levels. A total of fourteen pilot zones have been identified, four in Kenya, and five in each of Tanzania and Uganda. Work would be started in one pilot zone in each country in the first year - Nyakach Bay in Kenya (including the city of Kisumu), Mwanza Gulf in Tanzania (including the city of Mwanza), and Napoleon Bay in Uganda (including the city of Jinja). The other pilot zones are Berkeley Bay, Usenge-Yala, and Karungu Bay (Kenya); Mara-Shirati Bay, Speke Gulf, Emin Pasha Gulf, and Kagera-Rubafu Bay (Tanzania); and MacDonald-Berkeley Bay, Murchison Bay, Sesse Islands, and Sango Bay (Uganda).

3.4 Among *lake-wide* actions the project would: assess and measure sources of nutrients causing eutrophication; measure fisheries-trophic state interactions; model and monitor lake circulation; define and measure the contaminant threat; harmonize regulation and legislation; monitor recovery and impact; and build institutional capacity.

3.5 The project would support the following specific regional and national program activities: (a) management of fisheries, including the establishment and operations of the Lake Victoria Fisheries Organisation [US\$2.3 m], improvement of fisheries research and the information base for fisheries [US\$13.3 m], strengthening of extension, monitoring and enforcement capabilities of national fisheries administrations [US\$14.1 m]; and studying and implementing a Fish Levy Trust [US\$2.0 million]; (b) management and control of the water hyacinth infestation [US\$8.3 m]; (c) management of lake pollution and water quality, including strengthening and harmonizing national regulatory and incentive frameworks and enforcement capabilities, and establishing a lake-wide water quality monitoring system [US\$9.6 m], improvement of research and the information base for pollution control and water quality [US\$4.3 m], pilot investments in industrial and municipal waste management [US\$1.7 m], and priority waste management investments [US\$4 m]; (d) management of land use in the catchment, including improvement of research and the information base for pollution loading from the catchment, assessment of agro-chemicals, and pilot investments in soil

conservation and afforestation [US\$9.2 m]; (e) wetland management, including improving the information base [US\$3.4 m], and pilot investments in sustainable management of wetland products [US\$1.5 million]; and (f) support for institutions for lake-wide research and management, and pollution disaster contingency planning [US\$4.0 m].

C. PROJECT DETAILS

Fisheries Management [US\$2.28 million]

3.6 A Convention for the Establishment of the Lake Victoria Fisheries Organisation (LVFO), drafted with FAO assistance, was discussed in the three countries in late 1993 and early 1994, and signed by all three countries on 30 June, 1994. The proposed LVFO will be presided over by a Council of Ministers responsible for fisheries. It will have an Executive Committee made up of Directors of Fisheries Research, a Fisheries Management Committee, a Scientific Committee, such other sub-committees and working groups as might be needed from time to time, and a Permanent Secretariat located in Entebbe, Uganda. The LVFO will promote better management of fisheries on the lake, coordinate fisheries management with conservation and use of other lake resources, collaborate closely with all existing bodies (public and private, governmental and non-governmental) dealing with the lake, and all programs for its management (especially those relating to water quality), coordinate fisheries extension and related training, consider and advise on introduction of any non-indigenous aquatic animals or plants into the waters of the lake, and disseminate information on Lake Victoria fisheries.

3.7 The Secretariat, headed by an Executive Secretary (assisted by a Deputy), will have four permanent higher level staff - a Senior Biologist, Senior Economist, Administrative Officer (Finance) and Administrative Officer (Information and Database). It will engage short-term consultants (a total of 50 months over five years) specializing in legal matters, socio-economics, fish processing technology, fish harvesting technology, and water hyacinth control. It will be financed by GEF (90 percent). The project will finance vehicles; renovations of offices; office equipment; personnel costs, and operation and maintenance expenditures.

Fisheries Research [US\$13.33 million]

3.8 The program for fisheries research will provide information on the ecology of the lake and its catchment, the biology of its flora and fauna, the impact of environmental factors on the lake system, and socio-economic implications of use of the lake's resources. This information will contribute towards improved ecological efficiency, greater biodiversity, and ecological balance in the lake system. The research program will be operated by scientists with the help and participation of the extension services, fisherfolk community leaders, Government departments, and other stakeholders.

3.9 The fisheries research component will have five sub-components: studies of fish biology and biodiversity conservation, aquaculture, socio-economics, database establishment, and a fish stock assessment. The stock assessment will be financed by the European Union under a separate agreement, and although it is described below to provide a complete outline of the fisheries research program, the LVEMP would ensure only its coordination with other project components.

(a) Fish Biology and Biodiversity Conservation [US\$6.58 million]

3.10 This program will identify the main factors affecting aquatic biodiversity, determine diversity in aquatic flora and fauna, document them, map their habitats, educate people on their importance, and propose ways to exploit them sustainably. The program will rectify the serious lack of knowledge about the entire aquatic population of the lake, focusing especially on non-commercial fish of great biological interest, their species composition, population structure, food and feeding habits, trophic relationships, reproduction and breeding habits, recruitment patterns, growth, oxygen tolerance, mortality, and migrations, as well as the other organisms which play key roles in sustaining the Lake Victoria ecosystem, including specifically other aquatic vertebrates (frogs, reptiles, birds and mammals), macroinvertebrates (insects, molluscs, Caridina), microinvertebrates (copepods, cladocerans, rotifers), phytoplankton (diatoms, cyanophytes, green algae), macrophytes, and bacteria. The primary aim of this program is to gain information with which to design initiatives to sustain a complex ecosystem of substantial scientific importance. The outcomes of the studies will be species distribution and habitat maps, information on the genetic make up and diversity of different populations, understanding of the causes of decline of fish species, understanding of the impact of environmental changes on the biology, behaviour and survival of declining species, guidelines for species conservation and restoration, an updated bibliography of Lake Victoria, training of scientists, and dissemination of information to stakeholders through reports, videos, and workshops.

3.11 This sub-component will be implemented by the Fishery Research Institutes in the three countries, KEMFRI, TAFIRI, and FIRI, and financed by GEF (90 percent). The project will finance vehicles and boats; office, laboratory and field equipment; training and workshops; technical assistance; personnel costs, and operation and maintenance expenditures.

(b) Aquaculture [US\$3.10 million]

3.12 This program aims at restoring and sustaining the survival of several endangered and threatened species of fish. The program will address the continuing pressures to introduce more fish species into the lake (to take advantage of their production characteristics or market attraction), but will do so by avoiding the unforeseen effects of exotic introductions. The program will study the domestication of indigenous species of high nutritional value. The aim is to perfect aquaculture methods for such species, to assist them to compete in the market place with exotic tilapiines and carp. The outcomes of the program will be restored populations of selected endangered and threatened species (particularly *Oreochromis esculentus*, *Oreochromis variabilis*,

Labeo victorinus, Bagrus docmac, and Protopterus aethiopicus), improved fish supply to local riparian communities, return of delicacies to consumer markets, and development of commercial activity in ornamental species which will secure their survival rather than threatening it as at present.

3.13 This sub-component will be implemented by the Fishery Research Institutes in the three countries (KEMFRI, TAFIRI, and FIRI); the Fisheries Departments of the Ministry of Tourism and Wildlife (Kenya), Ministry of Natural Resources (Tanzania), and Ministry of Agriculture, Animal Industry and Fisheries (Uganda); in collaboration with local communities and NGOs. It will be financed by GEF (45 percent) and IDA (45 percent). The project will finance vehicles and boats; office, laboratory and field equipment; training and workshops; technical assistance; personnel costs, and operation and maintenance expenditures.

(c) and (d) Socio-Economics and Database [US\$3.65 million]

3.14 The aim of this program is to provide information which will be used to improve management of the lake resources in order that local communities will increase their benefits from the fishery, while sustaining the ecosystem from which the benefits arise. The initial actions will be to analyze and disseminate data from previous and ongoing projects on: (a) small scale fishing and fish commodity systems (financed by the International Development Research Center [IDRC]); (b) understanding the socio-economic impacts of changes in the lake fisheries (financed by the private MacArthur Foundation); (c) sustainable management of ecotones (transition areas between adjacent ecological communities) in collaboration with the University of Zurich; and (d) management strategies of fishing communities (financed by the EU).

3.15 The program will further provide information on current fishery distribution patterns, community involvement in harvesting up to marketing of fish, how activities of fisherfolk contribute to environmental degradation, nutrition, health and other social amenities of lakeside communities, alternative management systems incorporating different stakeholders, the contribution of fisheries to the three national economies, and the consequences of changes in fishing policies. The program outputs will be evolution of policies with greater community participation, a larger share for communities in the harvesting and marketing of fish, more fish available in local communities, and better health and social services for these communities. The database program will develop bibliographies and a central clearing house for information about the lake, an electronic communications network, and train librarians and other database managers.

3.16 This sub-component will be implemented by the Fishery Research Institutes in the three countries (KEMFRI, TAFIRI, and FIRI), in collaboration with Fisheries Extension, riparian universities, local communities and NGOs. It will be financed by GEF (23 percent) and IDA (67 percent). The project will finance vehicles and boats; office, laboratory and field equipment; books and journal subscriptions; training and workshops; technical assistance; personnel costs, and operation and maintenance expenditures.

(e) Stock Assessment [financed separately by the EU]

3.17 The first comprehensive stock assessment survey since 1969/74, and the first since the far-reaching changes believed to have occurred in the ecology of the lake, this exercise will focus on prime commercial species, and will provide information about the size of the fish stock, distribution and movement patterns, population structure, breeding habits, estimates of potential yield, characteristics of fishing gear, catch rates, description of the lake bottom, and updated bathymetric maps. Outcomes of the program will be guidelines for fishery conservation, sustainable use, permissible quotas, closed seasons, protected areas, and proposals for an integrated education program.

Fisheries Extension, Policies, Laws and Their Enforcement [US\$14.09 million]

3.18 The intention in the project is to separate law enforcement and extension activities. The *law enforcement* activities will comprise harmonisation of legislation among the three countries, identification and establishment of closed fishing areas (gazetted sanctuaries important for fish breeding, nurseries and juvenile feeding) in Kenya and Uganda, and verification of those already set up in Tanzania, training and empowerment of fisheries law enforcement officers, and establishment of customs posts at selected border landing sites (Muhoru and Port Victoria in Kenya; Kirongwe and Rubafu in Tanzania; and Mizinda/Kasensero and Sigulu Island in Uganda). The *extension* activities will comprise introduction of new techniques (such as lift netting and live bait fishing), small scale aquaculture, and promoting organisations of fisherfolk which will guard fisheries against illegal entry and gear thefts, act as channels for improved gear and credit, and assist with overall monitoring of fisheries in the lake. The program will begin in three pilot zones in the first year, and then be evaluated thoroughly before being expanded to a further six pilot zones in the third year, and five more in the fourth year. The program will also establish one fish quality control laboratory in each country (to carry out testing for microbes, heavy metals, pathogens, pesticides and other contaminants), and will study ways to reduce post-harvest losses of fish through improvements in handling and processing, and strengthening and harmonising data collection in the respective national Fisheries Departments. Included in the component are provisions for micro-projects in selected fishing communities. These will comprise small investments in community water supply from ground-water, sanitary facilities, local roads, and health facilities. Details of management arrangements for these are set out in the section on project implementation.

3.19 This component will be implemented by the Fisheries Departments of the Ministry of Tourism and Wildlife (Kenya), Ministry of Natural Resources (Tanzania), and Agriculture, Animal Industry and Fisheries (Uganda); in collaboration with the Fishery Research Institutes in the three countries (KEMFRI, TAFIRI, and FIRI), local communities and NGOs. It will be financed by IDA (90 percent). The project will finance vehicles and boats; office, laboratory and field equipment; books and journal subscriptions; training and workshops; technical assistance; construction of fish ponds; and construction of community facilities for water supply from ground-water, sanitation, roads, and health; personnel costs, and operation and maintenance expenditures.

Fish Levy Trust [US\$2.03 million]

3.20 This component will study and implement a system to collect levies from the fishing industry and use them in support of fisheries and ecosystem management in the lake and its catchment. In the first year of the project a study will be carried out of mechanisms for revenue collection and disbursement already in operation in each country, and additional possibilities for revenue collection. In the second year of the project the findings of the study will be discussed and agreed among the three governments, and a system to collect and disburse levies will be established in the third year of the project. The study will be carried out by consultants under the supervision of the Fisheries Departments of the Ministry of Tourism and Wildlife (Kenya), Ministry of Natural Resources (Tanzania), and Ministry of Agriculture, Animal Industry and Fisheries (Uganda), in collaboration with the Lake Victoria Fisheries Organization. It will be financed by IDA (90 percent). The project will finance vehicles; office equipment; training and workshops; technical assistance; personnel costs, and operation and maintenance expenditures.

Water Hyacinth Control [US\$8.31 million]

3.21 The aim of the program is to establish sustainable long-term capacity for maintaining control of water hyacinth and other invasive weeds in the Lake Victoria Basin. This will be achieved by an integrated effort involving intensified publicity, legislation, and integrated pest management with community involvement. The control program will rely on mechanical methods and limited chemical interventions for rapid short term control in restricted areas, and biological agents for longer term control. Reducing nutrient inflows into the lake will be a vital element in long term approaches to dealing with the problem. The biological control program will rely initially on multiplication and release of two weevil species that have been used and found effective world-wide, and have already been imported, reared and released in Kenya and Uganda. The species are the chevroned water hyacinth weevil (*Neochetina bruchi* Hystache) and the water hyacinth weevil (*Neochetina eichorniae* Warner). These two species are complementary in their action. The possibilities will be explored for supplementing the weevils by later releases of the moth *Sameodes albiguttalis*. The main elements of the biological control program will be establishment of mass rearing capacity in units around the shores of the lake as rapidly as possible, a coordinated field release program involving local community participation, monitoring performance of biological control agents in the field, and development of a monitoring and evaluation protocol and training program.

3.22 Implementation of the water hyacinth control program will be led by the agricultural research organizations of the three countries, namely the Kenya Agricultural Research Institute (KARI) in the Ministry of Research, Technical Training and Technology, the Uganda National Agricultural Research Organization (NARO) in the Ministry of Agriculture, Animal Industry and Fisheries, and the Tanzania Department of Research and Training in the Ministry of Agriculture, Livestock, Cooperatives and Development. The agricultural research institutions will be responsible, in particular, for the program to multiply and disperse the biological control agents. National Water Hyacinth Steering Committees will be established in

each country to oversee and coordinate the program, and to ensure the involvement of local communities and NGOs. The program will be financed by GEF (54 percent) and IDA (36 percent). The project will finance vehicles and boats; office, laboratory and field equipment; laboratory chemicals and herbicides; biological control agents; rearing facilities for bio-agents and renovation of offices and laboratories; training and workshops; technical assistance; personnel costs, and operation and maintenance expenditures.

Water Quality and Ecosystem Management [US\$9.58 million]

3.23 The aim of this component is to elucidate the nature and dynamics of the lake ecosystem by providing detailed information on the characteristics of the waters of the lake. The program will provide details of limnological changes, model and predict their short and long term consequences, and provide guidelines for ameliorating potentially disastrous changes. The program will provide quantitative information on nutrient loading and recycling in the lake (particularly the internal loading of sediment phosphorus); sources and mechanics of eutrophication and pollution and their effect on lake productivity (with a particular focus on ways to stabilize or reduce eutrophic status); phytoplankton communities and their composition; algal blooms and their dynamics; lake zooplankton, microbes, benthic flora and fauna, lake fly and their roles; primary production including estimation of lake carrying capacity; stratification of the lake and the increasing problem of anoxia; trophic inter-relationships; and lake palaeolimnology.

3.24 The program will consist of one core project, namely Management of Eutrophication [US\$6.86 million], two pilot projects, Sedimentation Studies [US\$0.63 million] and Hydraulic Conditions in Lake Victoria [US\$0.95 million], and construction of a model of water circulation and quality in the lake, designed to help manage the problems. The core project aims to establish periodic assessment of physical and chemical characteristics of the lake system. It will measure temperatures in different strata, dissolved oxygen, conductivity, pH, factors affecting light penetration such as suspended silt/sedimentation concentrations, water clarity, and spectral characteristics, biochemical oxygen demand (BOD) levels, levels of heavy metals (mercury, chromium and lead), pesticide residues, abundance and species composition of phyto- and zooplankton, phytoplankton primary production, levels of B-coli and E-coli. Analysis of these and other data will establish rates of change in water quality, relate these to the observed status of inputs from the catchment, estimate the effects of poor water quality on the economy of the region, and establish the basis for a practicable pollution control program.

3.25 The pilot sedimentation study will estimate sedimentation rates at the mouths of three rivers, the Kagera (Uganda), Simiyu (Tanzania) and Nyando (Kenya). It will assess the rate of release of nutrients from sediments, analyze sediment-biota associations, and compare the data with soil losses from surrounding areas. The pilot hydraulic study will measure patterns of water circulation in the Rusinga Channel (Kenya), and in similar areas in Tanzanian and Uganda waters, (Mwanza Bay and Murchison/Pilkington Bays respectively) to determine the interaction between vertical and horizontal circulation components, improve existing estimates of hydraulic

retention periods in the lake, and develop simulation models of the dynamics of nutrients and phytoplankton which will be used to predict the impacts of eutrophication control programs and pollution intervention strategies.

3.26 Under the former Hydromet Project, in 1979/80, executed by the World Meteorological Organisation (WMO) a Lake Victoria Water Quality Model was constructed, designed to be linked with a hydrological model developed with UNDP/WMO assistance. Unfortunately, this model was not calibrated, tested, or validated. The basic process formulations in this model will be re-assessed to determine their current validity, bearing in mind that scientific information about the lake has increased since the model was constructed, and will increase still further under the LVEMP. In addition, knowledge about what kinds of modelling are most useful for management have changed in the interim, making it necessary for the model to be re-formulated, calibrated, validated, and applied under the project to develop and test management strategies for the lake.

3.27 Implementation of the program will be led by the Ministry of Land Reclamation, Regional and Water Development (Kenya), the Ministry of Water (Tanzania), and the Directorate of Water Development of the Ministry of Natural Resources in Uganda. They will collaborate with the fisheries research institutes, communities, and NGOs in the three countries, with the Ministry of Environment and Natural Resources, Ministry of Agriculture, Moi University School of Environmental Studies, and the Institute of Nuclear Sciences at Nairobi University (Kenya), the Ministry of Natural Resources and the University of Dar es Salaam (Tanzania), and the Ministry of Agriculture and Makerere University Departments of Zoology and Chemistry (Uganda). It will be financed by GEF (90 percent). The project will finance vehicles and boats; office, laboratory and field equipment; laboratory chemicals and reagents; renovation of offices, laboratories, and monitoring stations; training and workshops; technical assistance; personnel costs, and operation and maintenance expenditures.

Industrial and Municipal Waste Management [US\$9.89 million]

3.28 This program consists of one core project, namely Management of Industrial and Municipal Effluents [US\$4.28 million], two pilot projects on Integrated Tertiary Municipal Effluent Treatment [US\$0.80 million], and Integrated Tertiary Industrial Effluent Treatment [US\$0.81 million], and a component for Priority Waste Management Investments [US\$4 million]. The overall aim of the program is to improve management of industrial and municipal effluent, and assess the contribution of urban runoff to lake pollution in order to design alleviation measures. The program will prepare inventories and classifications for all factories and industries in the catchment, assess treatment of effluent before discharge and its dilution and dispersion levels in the receiving water bodies, quantify pollution and nutrient flows from urban runoff, identify and characterise pollution "hot spots", formulate guidelines and effluent discharge standards, establish training arrangements for industrialists and local authorities, launch a public awareness campaign, and initiate pilot treatment projects in selected municipalities and industries.

3.29 The pilot industrial effluent treatment will create “wetlands” to test tertiary treatment through filtration of industrial waste from the PanPaper Mill in Webuye (Kenya) before it discharges into the Nzoia River, from various industries in Mwanza town (Tanzania), and from various industries in Jinja (Uganda). The pilot municipal effluent treatment will create “wetlands” to test tertiary treatment through filtration of municipal waste in Kisumu (Kenya), Mwanza (Tanzania), and Jinja (Uganda). The program of Priority Waste Management Investments will include urgent rehabilitation and/or extension of urban sanitation systems which are currently discharging untreated waste directly into the lake. Under this sub-component the project will rehabilitate the wastewater treatment works in Kisumu (Kenya), construct a community-based simplified sewage scheme in a portion of Mwanza (Tanzania) to complement an expansion of the water supply system financed by the EU, improve a sludge disposal site in Bukoba (Tanzania), assist the National Water and Sewerage Corporation in Uganda to develop a long-term pollution reduction strategy, and modify the main effluent discharge into the lake at the Bugolobi treatment works in Kampala (Uganda) to increase the detention time of effluent and reduce pollution entering the lake. Details of management arrangements for these waste management investments are set out in the section on project implementation.

3.30 Implementation of the program will be led by the Ministry of Land Reclamation, Regional and Water Development (Kenya), the Ministry of Water (Tanzania), and the Directorate of Water Development of the Ministry of Natural Resources in Uganda. They will collaborate with municipal and local councils, and industries in all three countries, with the Ministry of Commerce and Industry, the Lake Basin Development Authority, and Moi University School of Environmental Studies (Kenya), the University of Dar es Salaam (Tanzania), and the National Water and Sewerage Corporation (NWSC) and Makerere University (Uganda). Postgraduate students from the three universities will take up research study areas under this project, and it is envisaged that the pilot experiments with artificial wetlands, in particular, will be carried out as student research studies. The program will be financed by IDA (90 percent). The project will finance vehicles and boats; office, laboratory and field equipment; laboratory chemicals and reagents; construction of artificial wetlands; feasibility studies and structures for sanitation; training, workshops, and demonstrations; technical assistance; personnel costs, and operation and maintenance expenditures.

Land Use and Wetland Management [US\$14.05 million]

3.31 This program consists of two core projects, namely Management of Pollution Loading [US\$4.04 million], and Buffering Capacity of Wetlands [US\$3.43 million], together with four pilot projects: Assessment of the Role of Agro-Chemicals in Pollution [US\$0.86 million], Integrated Soil and Water Conservation [US\$1.49 million], Sustainable Use of Wetlands Products [US\$1.49 million], and Afforestation [US\$2.80 million]. Building on the last estimates of primary nutrients reaching Lake Victoria from its catchment, made in 1979/80 by the Hydromet Project, the pollution loading project will establish a water quality monitoring network throughout the catchment, estimate the effects of changes in land use planning on pollution loads in lake, and develop policies and programs to control non-point source pollution. The second project will investigate the buffering processes and capacity of Lake Victoria wetlands,

and devise a management strategy for them. It will develop an inventory and classification of the wetlands, monitor nutrient loading in priority areas, simulate the changes of buffering function associated with threats to the wetland resources, assess the economic value of buffering functions, and prepare guidelines and investment proposals for introducing wastewater into wetlands, as well as rehabilitation and artificial wetland construction.

3.32 The pilot project for agro-chemicals will be implemented on selected sites in the Winam Gulf, Nyando and Nzoia catchments in Kenya, the Simiyu catchment near Mwanza in Tanzania, and the Kakira sugar estate on the lake shore in Uganda. It will carry out inventories of agro-chemicals in the pilot areas, conduct field trials on the fate of pesticides and nutrients applied on farms, monitor residues leaching out of the pilot catchments, and pesticide levels in receiving rivers, assemble and review a database of agro-chemical use in the Lake Victoria Basin, establish arrangements for disseminating information to all stakeholders, and mount training courses for extension services on the better use of agro-chemicals. The soil conservation pilot will be implemented in the catchments of the Simiyu, Nyando, and Kagera Rivers. It will quantify soil erosion and nutrient loss from different land covers and uses, design remedial measures and sustainable agricultural practices, develop systems to promote soil and water conservation, and establish demonstration units to disseminate successful soil and water conservation measures. The wetlands pilot project, in selected communities in each of the countries, will estimate the economic benefits from wetlands products (fish, papyrus, reeds, clay, livestock grazing, and agricultural products), develop management strategies for their sustainable use, and for the rehabilitation of specific degraded wetlands, evolve strategies for community participation in sustainable use, initiate pilot activities to demonstrate this use, and strengthen capacity of local NGOs and CBOs to undertake wise use activities. The afforestation pilot project will protect vital parts of the lake catchment by planting trees. It will increase awareness among communities on catchment protection and tree farming, develop local seed sources, improve management of existing forest reserves and create new reserves, and conserve forest biodiversity.

3.33 Implementation of the program will be led by the Ministry of Land Reclamation, Regional and Water Development and the Ministry of Agriculture (Kenya), the Ministry of Water and Ministry of Agriculture (Tanzania), and the Directorate of Water Development of the Ministry of Natural Resources and Ministry of Agriculture (Uganda). They will collaborate with communities, NGOs, and the Ministries or Industry and Community Development in all three countries, with the Ministry of Environment and Natural Resources, and the Kenya Agricultural Research Institute (KARI) (Kenya), the Ministry of Natural Resources, and the Tropical Pesticides Research Institute (Tanzania), the Ministry of Environment, and the National Agricultural Research Organization (NARO) (Uganda). National wetlands committees in all three countries would also be involved in the wetlands components, with assistance from the World Conservation Union (IUCN), which would continue to foster regional cooperation among the developing national wetlands programs. The sub-components for Management of Pollution Loading and Wetland Buffering Capacity will be financed by GEF (90 percent), the sub-components for Assessment of the Role of Agro-Chemicals in Pollution, Integrated Soil and Water Conservation, and Afforestation will be financed

by IDA (90 percent), and the sub-component for Sustainable Use of Wetlands Products will be financed by both GEF (45 percent) and IDA (45 percent). The project will finance vehicles and boats; office, laboratory and field equipment; books and subscriptions to journals; laboratory chemicals and reagents; construction of rain gauge stations; feasibility studies and structures for sanitation; training, workshops, and demonstrations; technical assistance; ground and aerial survey work; forestry seedling nurseries and creation of reserves; personnel costs, and operation and maintenance expenditures.

Institutional Framework [US\$3.98 million]

3.34 This program consists of three components, namely maintaining the coordinating Secretariats [US\$2.75 million], support for riparian universities [US\$1.06 million], and preparation of a Pollution Disaster Contingency Plan for the lake [US\$0.17 million]. The three National Secretariats, which have proven successful in coordinating project preparation, will be strengthened by adding three positions: a Procurement/Disbursement Officer, an Operations Officer, and a Management Information Systems Officer. The Secretariats will provide a central contact point and information clearing house for all agencies implementing the program, and all donors supporting it. While the line agencies will be responsible for progress on their own components, and for monitoring and reporting on that progress, the Secretariats will gather information from all the agencies in their respective countries, be responsible for overall monitoring, and prepare progress reports for decision making about the overall project. They will ensure compliance with IDA and GEF reporting, procurement and disbursement procedures (see the Project Implementation Plan, Annex 3). The Heads of the Secretariats will, when necessary, organize tripartite meetings of officials responsible for various components of the program. The Regional Secretariat in Tanzania will organize meetings, when required, of members of the Regional Policy and Steering Committee. This management and coordination component will be financed by GEF (90 percent). The project will finance vehicles; office equipment; regional and national meetings and workshops; technical assistance; personnel costs, and operation and maintenance expenditures.

3.35 The component for the riparian universities will strengthen facilities for environmental analysis and graduate teaching at Moi University School of Environmental Studies (Department of Fisheries), at the University of Dar es Salaam (Department of Zoology), and at Makerere University (Department of Zoology). The component will be financed by GEF (90 percent). The project will finance vehicles and boats; office and laboratory equipment, chemicals and reagents; books and subscriptions to journals; and operation and maintenance expenditures.

3.36 Under the guidance of the Regional Secretariat in Tanzania, consultants preparing the Pollution Disaster Contingency Plan will draw up an inventory of hazards, hazardous sites, and vulnerable water uses and sites; review safety regulations; assess available facilities and planning provisions to deal with emergencies; implement a public education program, establish early warning systems, and develop a Regional Disaster Plan and Protocol to be agreed by the three governments. The component will

be financed by GEF (90 percent). The project will finance technical assistance to undertake a pollution disaster study and prepare a contingency plan.

D. PROJECT PRIORITIES

3.37 In this project the individual components fit together like a web, as befits a package of measures which addresses comprehensively the problems in an inter-connected ecosystem. Almost all components will contain a mixture of information-gathering, capacity building, and concrete actions to address the lake's problems. Much of the information-gathering will follow an adaptive environmental management approach, which involves learning by doing and adjusting or adapting management actions based on results. It is not easy, therefore, to separate actions from knowledge-building. It will be important for all components to be implemented from the beginning, and in all three countries simultaneously, at a comparable pace.

3.38 Project investments do, however, comprise a mix of activities in pilot zones, and activities carried out on a lake-wide basis. What is sequenced in the project is not the actions, themselves, but the pilot zones in which they are carried out. In the first year of the project, actions will be implemented in three pilot zones: Nyakach Bay in Kenya, Mwanza Gulf in Tanzania, and Napoleon Gulf in Uganda. Thereafter, groups of pilot zones will be phased in until by the end of the project actions will have been carried out in all 14 designated pilot zones. If there were to be funding crises, the response would be to postpone the work in the pilot zones planned for the outer years of the project. In this way the essential core of lake-wide activities would be preserved, as well as the coordinated nature of the adaptive environmental management approach in at least a sub-set of the pilot areas. Upon resolution of any funding crisis, work would be resumed with minimum disruption to progress.

E. PROJECT COSTS AND FINANCING

Cost Estimates

3.39 The total cost of the project, including physical and price contingencies, is estimated at US\$77.58 million, as outlined in the table below. Project costs are shown in US Dollars, because three different domestic currencies are involved.

Financing

3.40 The three governments would contribute US\$7.6 million to the project, leaving US\$70 million to be covered by donors. Incremental costs financed by the GEF amount to US\$35 million. The remaining project costs would be financed by IDA with an allocation of US\$35 million (Table 3.2).

GEF Incremental Costs

3.41 Incremental costs of the project under GEF definitions are estimated to be US\$38.8 million (details in Annex 7). In addition to financing the baseline and adjusted

baseline measures from non-GEF (IDA) sources, the three riparian governments have agreed to contribute US\$3.8 million from their own resources to finance a part of the project's incremental cost. They have requested a GEF grant of US\$35 million to fund the balance.

**Table 3.1 Project Cost Summary
(US\$'000)**

Project Component	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
A. Fisheries Management (LVFO)	314	1,649	1,964	84	3
B. Fisheries Research	5,893	5,910	11,802	50	17
1. Fish Biology and Biodiversity Conservation	2,618	3,164	5,782	55	8
2. Aquaculture	1,544	1,237	2,782	44	4
3. Socio-Economics Studies	1,332	1,048	2,382	44	3
4. Establishing Database	399	458	858	53	1
C. Fisheries Extension, Policies, and Laws	7,411	4,947	12,359	40	18
D. Water Hyacinth Control	5,423	2,042	7,465	27	11
E. Water Quality Monitoring	3,226	5,262	8,488	62	12
1. Eutrophication	2,720	3,409	6,129	55	9
2. Sedimentation (pilot study)	152	364	516	71	1
3. Hydraulic Conditions (pilot study)	138	700	838	83	1
4. Lake Victoria Management Model	216	789	1,005	78	1
F. Industrial and Municipal Waste Management	4,074	5,156	9,230	56	13
1. Management of Industrial and Municipal Effluent	1,871	1,897	3,768	50	6
2. Tertiary Municipal Effluent Treatment (pilot project)	481	260	740	35	1
3. Tertiary Industrial Effluent Treatment (pilot project)	462	260	722	36	1
4. Priority Waste Management Investments	1,260	2,740	4,000	69	6
G. Land Use and Wetland Management	8,093	4,468	12,560	36	18
1. Pollution Loading	1,962	1,603	3,566	45	5
2. Buffering Capacity of Wetlands	1,751	1,339	3,091	43	5
3. Assessment of Agro-Chemicals (pilot)	344	424	768	55	1
4. Soil and Water Conservation (pilot)	1,143	182	1,325	14	2
5. Sustainable Use of Wetlands Products (pilot)	969	366	1,336	27	2
6. Afforestation	1,924	552	2,476	22	3
H. Policy and Institutional Framework	3,097	2,193	5,290	41	5
1. LVEMP Secretariats	1,975	462	2,436	19	4
2. Support to Riparian Universities	319	628	947	66	1
3. Fisheries Levy Trust	803	953	1,755	54	2
4. Pollution Disaster Contingency	-	150	150	100	1
Subtotal Base Costs	37,532	31,627	69,159	46	100
Physical Contingencies	3,550	2,604	6,155	42	9
Price Contingencies	707	1,482	2,270	65	3
TOTAL COSTS	41,869	35,713	77,582	46	112

**Table 3.2 Financing Plan
(US\$ million)**

Project Component	Governments	GEF	IDA	Total	%
A. Fisheries Management (LVFO)	0.2	2.1		2.3	3
B. Fisheries Research	1.3	8.8	3.2	13.3	17
C. Fisheries Extension, Policies, and Laws	1.4		12.7	14.1	18
D. Water Hyacinth Control	0.8	4.5	3.0	8.3	11
E. Water Quality Management	1.0	8.6		9.6	12
F. Industrial and Municipal Waste Management	1.0		8.9	9.9	13
G. Land Use and Wetland Management	1.4	7.4	5.3	14.1	18
H. Policy and Institutional Framework	0.6	3.6	1.9	6.1	8
TOTAL COSTS	7.6	35.0	35.0	77.6	100

F. RATIONALE FOR GEF AND IDA INVOLVEMENT

3.42 Lake Victoria is an international water body that is both of great economic worth to the three riparian countries and of great scientific and cultural significance to the global community, mainly in respect of its unique waterborne biodiversity. It is suffering severely from three of the four major global environment concerns highlighted in the GEF Operational Strategy for International Waters - degradation of water quality due to pollution from land-based activities; introduction of non-indigenous species; and excessive exploitation of living resources. It is also facing their typical consequences - potentially irreversible environmental damage, hardship to the poor and serious health concerns. With poverty endemic to the region and many competing claims for scarce development resources, the case for GEF-support to overcome the barriers to concerted corrective action is extremely strong. As called for in the operational strategy, the GEF assistance will act as a catalyst for the three countries to develop a better understanding of how the lake functions, learn how the actions of their populations in the lake basin affect the lake environment, and work out ways jointly with one another to implement a comprehensive approach to managing the lake ecosystem to achieve global environment benefits. The project is consistent with both the GEF waterbody-based operational program and with the integrated land and water operational program, while also having elements of the third, contaminant-based, operational program. The project will in particular address another priority in the operational strategy - the conservation and sustainable use of biodiversity in freshwater ecosystems. As one of the world's largest unique freshwater biodiversity habitats, Lake Victoria is a clear priority for GEF assistance.

3.43 The GEF funding for this project will make possible the elaboration of a strategic framework for a large program of investments in the lake basin during the project implementation period, particularly in municipal waste management and soil conservation, and will also lay the foundation for a longer program of investments over time in these and other areas. It will thus have an enormous "leveraging" impact, for the benefit of the national and global environments. The GEF financing of preparation

succeeded in generating strong "ownership" of the project by the three governments which prepared it, and catalysed close collaboration at every stage among IDA, FAO, UNDP and UNEP. The information and pilot work carried out in the GEF project would orient ongoing investments and guide new ones during its five years of implementation, and far beyond. Within the next two years, under projects already begun, IDA and the European Union would finance improvements to municipal sewage treatment schemes in Kampala and Jinja in Uganda, and Mwanza in Tanzania. The funds would also finance a study of storm water drainage, solid waste management, and water reticulation in Kampala.

3.44 Several other major infrastructure projects are planned to begin implementation in FY98 which would finance water supply and urban sanitation in the lake basin, directly in support of the LVEMP. Further projects are planned to support natural resource management in the lake basin, including soil conservation and catchment afforestation. All of these projects will reduce pollution and eutrophication in the lake. While most of these projects were identified initially in the absence of the LVEMP, the latter will increase markedly the success with which they address the priority issues. The major projects still forthcoming will "take their signals" from the framework and findings of the LVEMP. Numerous smaller scale activities with bilateral support, implemented by local communities and NGOs, will also benefit from being planned in the context of the improved information base and management plans designed for the ecosystem as a whole, which will result from the LVEMP.

3.45 The project is consistent with the **Bank's Country Assistance Strategy (CAS)** for each of the three countries. The CAS for Kenya was discussed by the Board on January 31, 1996. One of the key elements of the strategy is to improve environmental management within the country, and to assist Kenya to respond to its commitments to enhance protection of the global environment. The CAS for Uganda was discussed by the Board on June 1, 1995. An important element of that strategy is to build domestic environmental management capacity, and in particular to address issues related to degradation of Lake Victoria. The CAS for Tanzania was discussed by the Board in March 1994, and a Progress Report was discussed by the Board on May 23, 1996. IDA financial support for the project is in line with two primary aims of the CAS, namely capacity building for improved public sector management, and creating a climate for environmentally sustainable investments.

3.46 The project would be the first substantial investment in the environment for IDA in two of the three countries following preparation of National Environmental Action Plans in all three. Various other donors have supported a range of initiatives in and around Lake Victoria, in smaller, uncoordinated, and sometimes incomplete ways. In the absence of a coordinated management system for the entire lake and its ecosystem, these smaller projects have sometimes fallen short, and continue to fall short, of realizing their maximum potential. Building on its wide-ranging relationships with all three governments, IDA has an important capability, and as implementing donor in this project an important opportunity, to support the development of such a coordinated management system. IDA also has the standing to mobilize scientific resources from across the globe in support of an initiative which has unprecedented interest to the global scientific community.

G. LESSONS LEARNED AND TECHNICAL REVIEW

3.47 This program would be the first of its kind within the region, addressing a complex set of managerial, scientific/technical and institutional issues across three countries. It would aim to provide Governments with the necessary skills, information, technical and financial resources, and a proper institutional and legal framework to carry out successfully such an endeavor. It would build technical capacity to promote, assist and coordinate the various initiatives within a regional framework, and help design a comprehensive set of national policies and strategies based on lessons learned from field experience. An important lesson incorporated from past operations was to ensure that preparation be done by the countries themselves. The resultant ownership will have the usual national benefits, as well as being especially important in this program which crosses national boundaries, since the three governments have already gained valuable experience working together during preparation.

3.48 The present report has responded to the GEF Technical Review of the project by acknowledging the uncertainty about sources and mechanics of eutrophication, incorporating the specific management elements suggested by the reviewer, setting the stage for a new approach to modelling, reiterating the emphasis on *management* of the lake's problems as the aim of everything in the project, and delineating the project's large elements of capacity building.

4. PROJECT IMPLEMENTATION

A. MANAGEMENT STRUCTURE

4.1 The Tripartite Agreement (signed August 5, 1994) which set in motion a collaborative process of project preparation among the three countries, provided also for project implementation. In particular it established three **National Secretariats**, each headed by a high-level officer, selected by the respective governments, and supported by a modest staff. These Secretariats served an essential coordination role during project preparation, and it is planned that this role should continue into the project implementation phase. They would be strengthened by the appointment of an Procurement/Disbursement Officer, an Operations Officer, and a Management Information Systems Officer. Among other things, these three officers would ensure compliance with IDA and GEF reporting, procurement and disbursement procedures (see the Project Implementation Plan, Annex 3). The three Secretariats, one in each country, would provide a day-to-day central contact point and information clearing house for all agencies implementing the program, and all donors supporting it. While the many implementing agencies would be responsible for progress on their own components, and for monitoring and reporting on that progress, the Secretariats would gather information from all the agencies in their respective countries, be responsible for overall monitoring, and prepare progress reports for decision making about the overall project. The Heads of the Secretariats would also, when necessary, organize tripartite meetings of officials responsible for various components of the program. The Regional Secretariat in Tanzania would organize meetings, when required, of members of the

Regional Policy and Steering Committee, which would also remain in place, with the same membership as it has had throughout project preparation. The Committee would have many roles, its most important being the mechanism for resolution of disputes arising during implementation of the program.

4.2 The **Lake Victoria Fisheries Organization** would assume overall coordination for components associated with fisheries, although as the project description outlines, implementation would be by individual national agencies, and the Regional Policy and Steering Committee would be responsible for overall program coordination, including coordination between the fisheries program as a whole and the rest of the program.

B. IMPLEMENTING AGENCIES

4.3 The various national agencies would implement components of the projects as follows. The three Fisheries Research Institutes (KEMFRI, TAFIRI and FIRI) would play lead roles in all sub-components of fisheries research, and would collaborate with the Fisheries Departments of their respective governments in the fisheries extension, and with the Ministries of Water in the Water Quality components. For the latter components, the Ministries of Water would be the lead agencies, and they in turn would collaborate closely with the Ministries of Environment, Natural Resources and Agriculture in their implementation of the components on land use and wetland management. National wetlands committees in all three countries would also be involved in these components, with continuing assistance from the World Conservation Union (IUCN). The Moi, Makerere, and Sokoine Universities, and the Universities of Nairobi and Dar es Salaam, would be involved in many of the studies, including those on socio-economics. The water testing laboratories of the Kisumu and Mwanza Municipal Councils, the Uganda Water and Sewage Corporation, and the Lake Basin Development Authority (in Kisumu) would extend the reach of laboratories already operating or planned by the respective Ministries of Water.

4.4 In order to address the variations in implementation capacity, from country to country, and agency to agency, with some strong already but others less so, every sub-program makes extensive provision for capacity building. For the whole project in the three countries provision is made for more than 2,000 short term and on-job training courses, about 100 regional Masters Degrees, and 15 PhDs. Care will be taken to strike a balance in the training and its timing so that enough people are available to implement the project.

4.5 For the Water Hyacinth Control Program, national steering committees or task forces will be set up, and rearing units for biological control agents will be established by the respective national agricultural research institutes. Finally, the project will also draw on the resources of local and international consultants in areas where particular scientific expertise is called for beyond the abilities of staff in the implementing Ministries.

4.6 Because of the extensive scientific investments in the program, the worldwide scientific interest in Lake Victoria, the need to seek innovative solutions to solving environmental problems that draw on a broad spectrum of physical, biological and

social sciences, and uncertainties associated with the dynamic lake ecosystem, it is also proposed to appoint a high level panel of internationally renowned scientists, initially with 7 members, to serve as an overall advisory group for the scientific studies in the lake. Possible scientific specialties for representation on the panel will be limnology, fish biology, zoology, entomology, plant physiology, microbiology, chemistry, meteorology, economics, anthropology, sociology, soil chemistry and physics, forestry, and ecology. The panel will contain at least three members representing the natural sciences and at least two from the social sciences, and its membership will be reviewed every two years, although members may serve unlimited terms upon reappointment by the nominating agencies. Following each two-yearly review, the panel will elect from among its members a corresponding secretary to facilitate communication within the panel. The panel members will be mutually acceptable to the three riparian states (as represented by the Regional Policy and Steering Committee) and to IDA.

4.7 The main aim of the **Panel of Scientists** will be to help ensure maximum benefits to the riparian states from activities of the international scientific community, by providing a means for improving the coordination of such activities and increasing their contribution to specific capacity building and problem solving in the lake basin. They will act as a standing committee of technical expertise to whom task and project managers under the LVEMP may refer technical issues and reports for comment and advice back to the referring managers. They will keep an up-to-date inventory of international, externally funded scientific research pertinent to LVEMP programs. Using electronic media such as the World Wide Web, they will keep the international scientific community informed about outstanding research issues being addressed by the LVEMP, in order to focus and mobilize that international community. They will help to identify international training opportunities for researchers from the riparian countries, and encourage the formation of partnerships and consortia between regional universities and the international community of universities. They will meet once a year to review issues arising from project implementation, and could meet at other times if required, as well as being available individually, at the request of the Regional Policy and Steering Committee, to provide advice about specific issues.

C. SPECIFIC IMPLEMENTATION ARRANGEMENTS

4.8 The project provides funds totalling about US\$3 million for the three countries to support *micro-projects* in selected fishing communities. These will comprise small investments, costing up to US\$15,000 each, in community water supply from groundwater, sanitary facilities, local roads, health facilities, and seed funds for assisting fishing communities to adjust to new regulations such as those related to fishing net mesh sizes. These micro-projects will address concerns directly related to the fisheries management and water quality emphases of the project, while providing incentives for communities to participate in components of the project across the board. The funds for these micro-projects will flow through the regional administrations, overseen by the Ministry of Tourism and Wildlife in Kenya, the Vice President's Office in Tanzania, and the Ministry of Agriculture, Animal Industry and Fisheries in Uganda.

4.9 The three Ministries responsible will each prepare an Operational Manual to guide all micro-project activities. It will contain, *inter alia*, criteria for identification,

appraisal, implementation, supervision, monitoring and evaluation, reporting and accounting requirements, sample contracting documents, standard forms for processing, technical data on infrastructure projects, and procedures for carrying out environmental assessments. An Evaluation Committee will be established in each of the three Ministries, which will approve/reject project proposals from the regional offices. In the regional offices, the proposed projects will be screened by Project Officers who will assess the impact on the community and on special groups (e.g. poorer women), likely returns on investment, factors affecting effective use and sustainability, satisfaction of technical standards, sensitivity to environmental goals, realism of costs, arrangements for implementation and supervision, and commitment of beneficiaries to maintenance (recurrent costs may be covered by allocation on the regional government approved budget).

4.10 Micro-projects must have at least 10 percent community cost-sharing, in the form of a financial contribution or through labor and materials. When micro-projects have been approved, the central Ministry will prepare a disbursement schedule, bidding documents, arrangements for procurement and contracts, review cost estimates, and sign a Financing Agreement with the respective Community Project Committee. Implementation of projects may be through self-help, by a Village Council or its Community Committee, by private contractors answering to the Community Committee, by Local Government Construction Units, or by an NGO contracted as a Collaborating Agency. While Community-Based Organizations (CBOs) will, in general, be preferred as implementing agencies, if NGOs are selected for implementation or to provide technical assistance they will be selected competitively by shortlisting several qualified NGOs, following IDA guidelines for use of consultants. Non-standard draft contracts between the administering Ministries and NGOs will be subject to review and "no objection" by IDA. Sole source selection of NGOs will be considered where justified by circumstances.

4.11 Funds will flow from a line budget in the administering Ministries, through the District Program Coordinators who will have an Authority to Incur Expenditure (AIE). Full authority for procurement of goods and services (which will follow normal government procedures satisfactory to IDA) will be vested in the districts. These include shopping and local bidding procedures and/or direct contracting where the first two methods are not feasible. Each micro-project will be supported by a technical proposal, basic financial analysis and budget approved by the District Steering Group, summarized in a sanction letter to be signed by the District Program Coordinator.

4.12 The priority *waste management investments* will be designed and implemented under the project. During the first two years the project will finance detailed design work for rehabilitating the existing wastewater treatment plant in Kisumu (Kenya), a simplified sewerage system for a portion of Mwanza (Tanzania), improvements in sludge disposal in Bukoba (Tanzania), and civil works on the main effluent discharge at the Bugolobi treatment works in Kampala (Uganda). In addition, during the first two years, the project will finance development of a long term pollution reduction strategy by the National Water and Sewerage Corporation (NWSC) in Uganda. In the third and fourth years of the project, the civil works in Kisumu, Mwanza, Bukoba, and at the Bugolobi treatment works will be constructed. Engagement of consultants to prepare

the detailed designs and the strategy, and contracting of civil works, will follow procedures acceptable to IDA as set out in the section on Procurement.

D. IMPLEMENTATION REVIEW

4.13 As they collaborated during project preparation, IDA, UNDP, and UNEP will also collaborate during reviews of implementation. IDA will have overall responsibility for review, UNDP will focus on stakeholder consultation and participation aspects of the project, and UNEP will focus on water quality aspects of the project. As part of the Mid-Term Review of the project (by March 1999), the three governments will prepare an updated analysis of transboundary environmental concerns, to guide the second phase of project implementation, and set the stage for subsequent initiatives. The Implementation Completion Report prepared by the three governments at the end of the project will include a revised Strategic Action Program, containing an outline of interventions needed to address priority problems. IDA will use this as the basis for convening a donors' meeting to seek commitments to support such interventions.

E. PROCUREMENT

4.14 The entities responsible for coordinating program implementation and procurement will be the LVEMP National Secretariats in the respective countries, the Ministry of Environment and Natural Resources in Kenya, the Ministry of Natural Resources in Uganda, and the Department of Environment in the Vice President's Office in Tanzania. They would consult with the implementing sector Ministries and their research organizations dealing with water, fisheries, and agriculture. Each implementing agency will be responsible for procurement for the project components assigned to it. The Lake Victoria Fisheries Organization (LVFO) will be the implementing and procuring agency for its activities.

4.15 IDA Guidelines for Procurement (1995) and IDA Guidelines for Use of Consultants (1981) will be followed for all project components funded by the IDA Credits and the GEF Grants. The Bank's Standard Documents for Procurement of Goods (1995) and the Bank's Standard Form of Contract for Consultants' Services (1995) will be used for all procurement under International Competitive Bidding (ICB) procedures and consultancy contracts for Technical Assistance, respectively. Before commencing procurement under National Competitive Bidding (NCB), and prior to Credit Effectiveness, draft bidding documents will be finalised in consultation with IDA. Standard bid evaluation reports developed by IDA will be used in presenting evaluation reports to IDA.

Procurement Arrangements

4.16 As part of the Project Implementation Plan (PIP), a procurement plan for major contracts has been prepared for the project. Standard procurement processing times for key activities were agreed with each of the participating Governments at negotiations.

4.17 Procurement of works, goods and services for all IDA/GEF financed components will be coordinated centrally in each country by its LVEMP National

Secretariat (LVEMP), but processing of bidding documents will be handled by the sectoral ministry/agency in charge of project implementation. However, in the case of common items such as vehicles, motor cycles, and office equipment, procurement will be "bulked" at the national level. Procurement of these "bulked items" will be processed by the LVEMP National Secretariats in each country. The National Secretariat in each of the participating countries will be strengthened for this purpose by the addition of a qualified procurement/disbursement specialist familiar with International Competitive Bidding (ICB) and procurement procedures.

4.18 The Category of Works includes civil works, on a pilot scale, for creation of tertiary "wetlands" to test the treatment of municipal effluent using a system which could be later adopted on a larger scale. The works would include design of the "wetland", construction of diversion channels, pipes, sluice valves, gates, platforms, access road(s), environmental protection works, and land development works. No ICB procurement of works is foreseen due to the small scale of construction at dispersed locations (contracts ranging from US\$5,000 to US\$100,000). Ministries that do not have the required technical expertise will engage consultants to design and supervise civil work contracts. Contracts for goods, including vehicles and equipment would be grouped into packages of US\$100,000 or more wherever practicable, and procured through ICB.

4.19 Prior Review. All procurement packages for civil works, goods, supplies, materials and maintenance contracts with an estimated contract value above US\$100,000 will be subject to IDA's prior review, in accordance with Appendix 1 of the IDA Guidelines. All consulting contracts with firms with a contract value above US\$100,000 or with individual consultants with a contract value above US\$50,000 will be subject to IDA's prior review. In addition, all terms of reference for proposed consulting assignments will be subject to IDA's prior review.

4.20 In order to ensure that appropriate procedures are being followed, the first three contracts for goods, civil works, and consultancies, irrespective of contract value, will be subject to IDA prior review. During supervision missions, IDA will review one in five randomly selected contracts which are below these prior review thresholds.

4.21 Procurement Methods. The procurement of vehicles, motorcycles, bicycles, office equipment, and supplies will be carried out in reasonable packages of similar goods under the following procedures (aggregate amounts for non-ICB procedures are shown in the respective procurement table for each participating Government, for the GEF Grant and the IDA Credit):

- International Competitive Bidding (ICB), if the estimated contract value per package is more than US\$100,000;
- National Competitive Bidding (NCB), if the estimated contract value per package is more than US\$50,000 but less than US\$100,000;
- International Shopping Procedures (ISP) in accordance with Section III of the IDA guidelines, on the basis of at least three quotations from reputable

suppliers in two different countries, if the estimated cost per package is more than US\$20,000 but less than US\$50,000; as an alternative to ISP, Inter-Agency Procurement Services Office (IAPSO) procurement procedures may be followed;

- National Shopping Procedures (NSP) in accordance with Section III of the IDA Guidelines, on the basis of at least three quotations from local suppliers, if the estimated cost per package is less than US\$20,000;
- The aggregate amounts for ISP and NSP, respectively, would be 60 percent and 40 percent of the Category "Other" for each GEF Grant and IDA Credit.

4.22 Technical Assistance Consultancies. The selection of consultants to provide technical assistance will be carried out according to IDA Guidelines, including shortlisting, letters of invitation and evaluation of technical and price proposals. General procurement notices issued annually will highlight major consulting assignments, which will assist in establishment of shortlists. Selections for short-term assignments and the selection of individual consultants for contracts below the prior review threshold will follow procedures specified in Section V of the IDA guidelines.

4.23 The selection of NGOs to provide Technical Assistance will be competitive through shortlisting of several qualified NGOs, and otherwise will follow *IDA Guidelines for Use of Consultants*.

4.24 Training. Each implementing department and agency will prepare an annual training plan and submit it to the respective LVEMP National Secretariat. The training program will identify the subjects and courses for training, their timing, duration, estimated costs, name and location of the training institutions, the names of the persons proposed, and the justification for their training. The training plans will be submitted to IDA for approval, the first within three months of Credit Effectiveness, and subsequent annual plans prior to the commencement of each fiscal year.

4.25 Procurement Monitoring. During project implementation the LVEMP National Secretariats will provide quarterly reports on progress of procurement highlighting difficulties encountered in the past, and how they would be addressed in the future to ensure timely project completion.

F. DISBURSEMENT

4.26 The proposed IDA Credits, respectively of SDR 8.9 million for Kenya, SDR 7.0 million for Tanzania, and SDR 8.4 million for Uganda, the proposed GEF Grants, respectively of SDR 8.0 million for Kenya, SDR 7.2 million for Tanzania, and SDR 9.2 million for Uganda, would be disbursed over a period of 6 years with an expected project completion date of June 30, 2002, and a closing date of December 31, 2002. The schedule of estimated disbursements is in Annex 2.

4.27 **Disbursement Procedures:** Disbursements from the IDA Credit will be in accordance with normal IDA procedures set out in the Disbursement Handbook

(November 1992). Once agreement has been reached on the annual work program and budgets with the respective implementing agencies, that is the LVEMP National Secretariats and the focal Ministries in each country, or the LVFO as the case may be, disbursements from the credit will be made following the standard procedures, including: reimbursement of expenses incurred by the LVEMP National Secretariat, the Ministries of Environment and Natural Resources, or the LVFO (as the case may be) against submission of disbursement requests, direct payment to suppliers or replenishment of special accounts.

4.28 To facilitate disbursement, IDA will advance a sum of US\$500,000 for the Lake Victoria Environmental Management Program to the LVEMP National Secretariats in each of the three countries into Special Accounts in US Dollars to be opened with a commercial bank acceptable to IDA. Upon effectiveness the advance amounts will be deposited to the Special Account and subsequent amounts deposited against disbursement application(s). Replenishment applications for the Special Accounts would be submitted monthly or whenever the Special Account balances are reduced by one third, whichever comes first. The account may be used to pay for expenditures in either local currency or foreign exchange through the commercial banking system, against any category of expenditure. All replenishments should be fully documented except in the case where statements of expenditure (SOEs) are authorized.

4.29 *Disbursements by IDA against Statements of Expenditure (SOEs):* the respective project implementing agencies may claim reimbursements on the basis of statements of expenditures (SOEs) for:

- (a) Goods costing less than US\$100,000 equivalent.
- (b) Consultant contracts, costing less than US\$100,000 equivalent for firms, and less than US\$50,000 for individuals.
- (c) All local training, workshops and studies.
- (d) All training costs less than US\$10,000, and all operating costs.

The respective implementing agency will retain all the relevant supporting documentation for reimbursements of SOEs for inspection by IDA. During the course of the annual audit of the project accounts, the auditors will certify that all expenditures claimed under SOEs have been properly incurred for the project.

G. ACCOUNTING AND AUDITS

4.30 A single set of consolidated accounts will be prepared for each component under the program. For preparation of the component accounts, and records of project activities, including SOE's and the Special Account in accordance with sound accounting practices, responsibility will rest on the accountants appointed for this purpose under the program (in the LVEMP National Secretariats and the LVFO when established) under the Ministry of Environment and Natural Resources in Kenya, the Vice President's Office in Tanzania, and the Ministry of Natural Resources in Uganda.

Assurances were obtained during negotiations that the Governments will have the records and accounts of the Project, including the Special Accounts and SOEs, audited for every fiscal year, by independent auditors acceptable to IDA, and that it will submit the audit reports to IDA within six months of the end of every fiscal year, with a separate opinion by the auditors on SOEs.

4.31 Foreign exchange Special Accounts will be established by each country for the program with an international commercial bank of good repute, on terms and conditions satisfactory to IDA. Upon credit effectiveness an initial deposit of US\$0.5 million would be made into the Special Account of the Lake Victoria Environmental Management Program in each country, representing about four months of IDA/GEF disbursements. Operation of these Special Accounts will follow IDA procedures, and the account will be replenished on the basis of regular monthly applications from the LVEMP Secretariat or the LVFO, documenting expenditures from the account.

H. SUSTAINABILITY AND PARTICIPATION

4.32 The two most important elements of sustainability are stakeholder ownership, and provision for fiscal continuance. They have been addressed by a highly participatory mode of project preparation, and will be addressed during implementation by special efforts to involve local communities, and support for a Fisheries Levy Trust study to seek sources of funds for ongoing support for lake ecosystem activities.

4.33 Catalyzed by GEF financing, the three governments prepared the project themselves, in the process resolving many issues among them, demonstrating good technical collaboration, and generating strong ownership for the implementation phase. The Tripartite Agreement signed in August 1994 covered both preparation and implementation, thus providing for the implementation phase a continuing legal framework which has already been tested and found sound. Institutional arrangements which have proved their worth during preparation - especially the structure of National Secretariats and a joint Policy Steering Committee - will be continued unchanged for implementation, except that the Secretariats will be strengthened by the addition of specialized personnel.

4.34 Supported by the UNDP, special efforts during preparation were made in all three countries to involve communities around the lake in generation and discussion of project proposals, along with information-gathering to ensure that project proposals address the needs of local communities. In all three countries consultants were engaged who visited communities, women's groups, projects of community-based organisations and NGOs in fisheries and fish processing, soil conservation, wetlands development, and water hyacinth control, among many others. In Tanzania, for example, a study of community needs was conducted in three regions, 12 districts, 24 fishing villages and more than 85 groups or communities. The consultants also worked with NGOs and others to conduct stakeholder workshops, and with the government working groups to incorporate a community focus into the preparation report. The large emphasis on fisheries extension is one of many outcomes of this process. Others include the provision for community micro-projects among the investments which the project

supports, and the proposals for community involvement in many of the research programs to be conducted under the project. The government preparation report acknowledges that "one of the major setbacks in aquatic resource management in East Africa is the general lack of community participation in management programs", and notes that such participation "is considered key to the successful implementation of this program."

4.35 Throughout the project special efforts will be made to involve local communities, and the capacity of a number of local NGOs and CBOs will be strengthened so that they can facilitate the process of community participation and ownership, and lead the communities in undertaking wise use activities of the resources in the lake and its basin. A special feature of the Fish Biology and Biodiversity Conservation program implementation, for example, will be attempts to involve local communities in identification of issues, tagging and recapture efforts, return of immature fish, surveillance of protected areas, sampling of commercial catches, protection of research equipment, and compilation of research data. Many of the other scientific initiatives will involve communities in carrying out the measurements, and in caring for monitoring equipment. For the water hyacinth control program, in particular, it will be essential for local people to understand and assist with the biological control efforts.

4.36 The project has community participation woven into virtually every component, funding for micro-projects, a great deal of community training, financing for hundreds of stakeholder workshops, and provision for community participation in everything from scientific studies to water hyacinth control, fisheries research to own-enforcement of agreed fishery regulations, sustainable use of wetlands to soil conservation, with benefits springing from better fishing management, aquaculture, higher quality products, lower post-harvest losses, cleaner water, more control over local fishing beaches, and construction of community assets.

4.37 Acknowledging that availability of reliable and adequate funding is essential for management of fisheries, which involves continuing research, extension, monitoring and enforcement, the three governments have proposed to study and implement jointly a program in which funds raised from the commercial fisheries themselves would contribute to underwriting fisheries management in the longer term, as well as assisting some of the central monitoring and management initiatives to become fiscally sustainable. The study will identify sources of funds, and also examine in depth the issues involved in managing such funds on a regional basis. The LVEMP includes financial support for establishing a shared Levy Trust Fund among the three countries, should the study show this to be feasible.

I. MONITORING AND EVALUATION

4.38 The project is designed to be a mixture of information-gathering, capacity-building, institution establishment, and actions to deal with the environmental problems of the lake and its catchment, with an emphasis on fisheries management, water hyacinth control, improving water quality, and land use management (including wetlands). A central concern is to reduce the flow of nutrients and pollutants into the lake, and reverse some of the adverse environmental developments of the past. This

project will attempt to lay the foundations in these areas, and provide a “central core” around which will coalesce a larger program of investments to clean up the lake, and establish sustainable development of the lake and its catchment in the face of the growing population pressures likely to be experienced.

4.39 It will be difficult to isolate and measure the project’s impact on development in the lake and its catchment. Although there are some specific characteristics of the lake which can be measured - water quality, fisheries yield, and ecological stability - the lack of reliable historic data will make it hard to calculate in an exact way the extent to which the LVEMP itself is responsible for changes noted, since these have to be considered against some prediction of what would have happened without the project.

4.40 Monitoring of the lake catchment and of the LVEMP will focus on measuring the *state* of the lake (water quality, fish stocks, and species richness) and measuring (or estimating) changes in the *inputs* to the system (such as fishing effort, and loads of key pollutants). Specific indicators of project impact will include (a) reductions in the nutrient and fecal coliform counts from towns bordering the lake; (b) reductions in sediment and phosphorus loading in rivers flowing into the lake; (c) reductions by at least 50 percent over five years in significant industrial pollutants entering the lake; (d) stabilizing the Nile perch catch at least at current levels, and increasing the recovery of other species; (e) measurable reduction in the infestation of water hyacinth; and (f) stabilization of areas retained as wetlands.

4.41 The main indicators of project implementation success will be (a) building capacity within the riparian universities, the line ministries, the LVEMP secretariats and the riparian communities for environmental analysis, conservation and adoption of cohesive management practices on and around the lake; (b) harmonizing among the three countries legislation addressing management of fisheries and environmental variables important in the lake basin, and improved enforcement of this legislation; (c) establishment of the Lake Victoria Fisheries Organization (LVFO); (d) completion of gazetting and regulating fish landing sites within the pilot zone areas and enforcing acceptable fishing practices within a 5 km radius of fishing villages within these areas, with full participation of lake shore fishing communities; (e) establishing sustainable long-term capacity for management and control of water hyacinth and other invasive weeds in the Lake Victoria Basin, through integrated weed control methods and community involvement; (f) establishing a lake wide water quality and rainfall monitoring system with agreed parameters to generate information on eutrophication management and pollution control; and (g) completing a full inventory and resource survey of Lake Victoria wetlands, and preparing investment proposals for the economic management of these wetlands, including their rehabilitation.

5. PROJECT BENEFITS AND RISKS

A. BENEFITS

Background

5.1 The LVEMP is a comprehensive program aimed at rehabilitation of the lake ecosystem for the benefit of the people who live in the catchment and its area of influence. The scientific evidence shows that the present methods of exploitation and development in the catchment are unsustainable, and that without intervention there could be serious environmental and related socio-economic consequences. The most pressing concern is a possible decline in the very valuable fishery (currently worth about US\$320 million annually in export revenue), but this predicted decline represents merely an immediately obvious outcome of the loss of resilience of the ecosystem. Sediments and pollution are degrading water quality, increasing urbanization and agricultural expansion are both resulting in the loss of wetlands -- including swamps and satellite lakes that still shelter a remnant of a once spectacular native aquatic fauna, changes in feeding chains and trophic systems since the introduction of exotic fish species are trending toward a highly unstable fisheries monoculture, and -- a fundamental and ominous change -- the anoxic portion of the lake waters (a biologically almost dead zone) has been steadily increasing over recent years.

5.2 The fundamental objective of the LVEMP is to restore a healthy, varied lake ecosystem which is inherently stable and which can support, in a sustainable way, the many human activities in the catchment. Development pressures in the catchment are increasing because of natural population growth and migration from poorer and less fertile rural areas, and the multi-purpose central role of the lake is becoming increasingly important even as its capacity to cope is being threatened.

5.3 The economy of the lake catchment produces in the order of US\$3-4 billion annually and supports an estimated population of 25 million people at standards of living in the range of US\$90-270 per capita p.a., based on national figures. The lake catchment economy is principally an agricultural one, with a number of cash crops (including exports of fish) and a high level of subsistence fishing and agriculture. The quality of the physical environment is therefore a fundamental factor in maintaining and increasing the living standards of the growing population.

Gross Benefits

5.4 The main economic benefits of the overall LVEMP derive from avoiding the losses that can be anticipated if effective action is not taken. According to the best understanding of the local and international scientific research community, as documented in the material presented by the Regional Task Forces for project preparation, the major consequences of not halting the present trends could be:

- (a) a decline in the overall fishery as a result of both overfishing and deterioration of lake water quality;

- (b) increasing extent and severity of water hyacinth infestation;
- (c) unsuitability of the lake water for domestic supply or animal watering;
- (d) continued degradation of the wetlands.

5.5 The *regional* benefits of the programme would be the incremental avoidance or reduction of damage costs associated with these consequences, beyond the damage avoided as a result of actions that would have been taken to achieve local benefits. In addition there would be other benefits as a result of bringing forward projects which are in themselves economically justified (such as soil conservation or industrial pollution control).

(a) Fisheries

5.6 The most dramatic and direct effect of not taking action would be the onset of instability in the Nile perch fishery. One possible scenario would be a highly variable and unpredictable annual catch, which could drop in some years to as little as 10 percent of current levels. On the other hand, fisheries models, which still need to be verified, suggest that a sustainable fishery could be developed which would allow annual yields of perhaps 90 percent of current levels, still dominated by Nile perch but with a wider range of other species.

5.7 The value of moving to the sustainable level of catch can be estimated, on a conservative basis, as the difference between the income stream from 90 percent of the current catch and that from an average 50 percent of the current catch, calculated after year 5 of a management programme:

Export value of a sustainable fishery:	90% of \$320m p.a. = \$288m p.a.
Export value of an uncontrolled fishery:	50% of \$320m p.a. = \$160m p.a.
Difference, starting from year 6, attributable to the LVEMP =	\$128m p.a.
Present value of this revenue stream at a 12 percent discount rate: =	\$600m.

5.8 The major potential benefit of avoiding the projected collapse of the fisheries would therefore be preserving export revenues with a present value of **US\$0.4-0.8 billion**, depending on the assumptions used. The direct revenues to the fishing communities on the lake, from these export fisheries, are estimated to have a total present value of **US\$0.2-0.4 billion**. These communities would receive additional benefits from two sources: (a) that portion of the value added in processing and packaging which is distributed to them in the form of payments for good and services, estimated to have a present value of **US\$40-80 million**; and (b) income from *local* production and marketing of fish, estimated to have a present value of **US\$10-20 million**. Moreover, one objective of the LVEMP is also to increase the proportion of local food fish in the system and the benefits of the program therefore include a real increase in the local fishery, which would be at least of the same order of magnitude as the loss avoided. The total present value of the impact of the LVEMP on the local fish economy would therefore be **US\$20-40 million**.

5.9 On reasonable assumptions, therefore, it is estimated that successful implementation of the LVEMP could protect annual export earnings from the fishery to the extent of about US\$128 million per annum, which represents a present value of exports of US\$600 million, and of revenue to the lake community of US\$240-480 million. In addition, the present value of the local fishery would be increased by US\$20-40 million over the case where no action is taken.

5.10 Reversing the direct loss of revenue would have major impacts through the various industries and activities which support the fishermen active on the lake. It has been estimated that there is a multiplier of about 5 in terms of the numbers of people involved in these supporting activities and therefore half a million people, including workers and their families, would be affected by reversing the loss of revenue.

Water hyacinth

5.11 The spread of the water hyacinth infestation is imposing a wide range of direct costs on the lake community. These costs include:

- delays in commercial waterborne transport of people and goods (in some cases reported to result in a 10-20 percent increase over scheduled times);
- increased operating costs (and possible loss of revenue) for hydropower production at Owens Falls Dam, due to clogging of water intakes;
- loss of fishing time (and revenue) as a result of blocking of the beaches;
- increased difficulty and time spent on gathering water in villages where access to traditional water collection areas is blocked or dangerous (because of snakes or crocodiles in the weed);
- blockage of intakes and loss of production at urban and industrial water supply systems.

5.12 Some initial estimates have been made for these costs but further data will be required to refine the estimates. It should be noted that these figures represent the *present* costs: the water hyacinth infestation is increasing at a rapid rate and - unless controlled - will spread and also become more of a problem at existing sites. In the absence of a successful control program, the following are the estimated costs within five years:

- (a) maintaining a clear passage for ships to dock at Port Bell in Uganda: US\$3-5 million p.a.;
- (b) cleaning intake screens at the Owen Falls hydroelectric power plant at Jinja in Uganda: \$1 million p.a.;

- (c) losses in local fisheries from accumulation of water hyacinth at fishing beaches and landing sites around the lake making it difficult or impossible for fishing boats to be launched or recovered: US\$0.2 million p.a. but with a very serious local impact;
- (d) loss of the beaches as a water supply for domestic, stock and agricultural purposes: US\$0.35 million p.a.;
- (e) loss of supply or increased maintenance costs in urban water supply schemes because of blockages of the water intakes by water hyacinth: US\$1.5 million p.a.;
- (f) small-scale horticultural irrigation schemes rendered useless because of blockages of channels and pipes with hyacinth: no costs have yet been attributed to these losses but they are important from a distributional viewpoint since such schemes are being developed to help women in the poorer lakeshore areas.

5.13 The total of these direct costs attributable to the water hyacinth (*at its present levels*) is estimated to be US\$6-10 million p.a., with a present value of US\$25-40 million. This figure can be compared with the estimated US\$4.5 million cost for the Ugandan government's emergency action program to tackle the problem, which must represent a lower bound to estimates of the damage in what is only part of the total shoreline.

Water quality

5.14 Deteriorating water quality will have a number of direct effects, the avoidance of which can be counted as potential benefits of the programme. These include:

- additional water treatment costs to deal with increasing levels of algae;
- impacts on water available for cattle: algal blooms can render water unsuitable for cattle and in extreme cases are known to be fatal to animals;
- loss of potential tourist revenue: polluted or foul-smelling water would prevent the expansion of the present (low) level of tourism to the lake;
- health effects of increased malaria and bilharzia as a result of stagnant and polluted water.

5.15 The costs of water supply improvements can be calculated once the extent of supply systems round the lake are detailed. As a first estimate, assuming (as before) that one million people are affected, an additional cost of US\$1 per capita would mean US\$1.5 million p.a. at present, but this would increase as the population connected increased and a value double this would be quite reasonable, i.e. US\$3 million p.a.. The costs of water for animals is more difficult to estimate but costs of \$1 per beast spread over half a million cattle in the vicinity of the lake are plausible. A minimum cost

associated with the decline in water quality is therefore estimated at **US\$3.5 million p.a.**, (present value US\$15 million) and increasing.

Wetlands

5.16 Given the lack of data on the type and extent of wetlands it is not possible to estimate the value of preserving these systems, but a wide range of functions of wetlands have been identified, both in general and for Lake Victoria in particular. These include: buffering of the impacts of increased loads of nutrients and sediments; breeding areas for fish and animals of value to the local population; protection of local water supply sources; provision of papyrus and other materials of commercial value. Preserving the wetlands is very important for sustaining biodiversity, as well as for helping to maintain the lake as a functioning and stable ecosystem.

5.17 On the other hand, development of wetlands has been promoted because of their potential for increased agricultural production and because of the perceived health problems associated with wetlands (such as mosquitoes and tsetse fly). Further work is required to understand and quantify the benefits of preserving key components of the existing wetlands systems but the balance of professional opinion, supported by informed local comment, is that the net value of preservation would be high.

Biodiversity

5.18 One objective of the LVEMP is the preservation of the existing richness of the haplochromid fish fauna because of its scientific interest and its role in providing a resilient ecosystem for the whole lake. The ecosystem support benefits are included in the valuation of stabilizing the fisheries, but the intrinsic and scientific value of the biodiversity that is believed to be threatened under current conditions are additional benefits for which no valuation is yet available.

Summary

5.19 The major direct economic benefit for which the program lays the foundation would be avoidance of the predicted collapse in the fisheries, which is estimated to have a present value to the lake community of US\$270-520 million.

5.20 The water hyacinth problem, which is rapidly becoming more severe, is estimated to have an annual cost of US\$6-10 million under current levels of infestation. These costs, whose present value is an estimated US\$25-40 million, as well as even larger costs which might be associated with increased infestations in the future were nothing to be done, would be largely avoided if the LVEMP were successfully implemented.

5.21 Deteriorating water quality may impose additional water supply costs which are estimated to be a minimum of US\$3.5 million p.a. (present value US\$15 million) and would increase considerably without action.

5.22 Other benefits arising from the preservation of wetlands and of biodiversity have not been valued here.

Net Benefits

5.23 The costs of achieving the benefits identified here will include the direct costs of the LVEMP, which is a regional program, and of national actions which are taken in support of the program. Many of the national expenditures, in particular, will be economically justified in their own right (for example, fisheries post-harvest improvements or provision of sewerage) and so the effect of the LVEMP will be to bring forward in time the net benefits of these programmes. In such cases, the costs and benefits attributable to the LVEMP will be the marginal ones related to the changes in timing or focus of the national programmes.

5.24 Typical of the projects to be tackled as national concerns, within the framework of the LVEMP, which would be expected to produce net benefits in their own right, and where the costs attributable to the LVEMP may be exceeded by the benefits achieved through bringing the projects forward would be:

- expansion of artisanal fishing and processing;
- reduction in post-harvest fish losses;
- implementation of water hyacinth control;
- wetland conservation;
- improved pasture management;
- catchment soil conservation;
- rural water and sanitation;
- urban sewerage upgrading;
- industrial pollution abatement.

In so far as these projects can be implemented under existing or proposed programmes and as long as they are economic in their own right, the net costs to the LVEMP will be minimal.

B. ENVIRONMENTAL ANALYSIS

5.25 The program is in effect a regional environmental action plan for Lake Victoria, having as its central objective improving the environmental conditions of Lake Victoria and its catchment. However, the program will encompass a wide range of different interventions and investments, and has been designated as Category B for environmental analysis to ensure that adequate attention will be given to the many overall positive impacts as well as to individual components which might have adverse local environmental effects.

Positive Impacts

5.26 The environmental analysis (available separately) outlines the problems the program is trying to address, and the potential benefits from proposed measures to be

implemented. Beginning with a discussion of population growth, which underlies the pressures to which the lake and its catchment are increasingly being subjected, the analysis proceeds to assess the pressures. Populations of urban areas around the lake are growing at an estimated 6 percent p.a. or more, and rural areas near the lake shore are experiencing in-migration which is causing faster growth of their populations even than the already high national averages of over 3 percent p.a.

5.27 This population pressure is, in particular, contributing to the existence of pollution "hot spots" where there is especially heavy localized degradation of water quality in the lake, from human waste, urban runoff, and the effluent discharges of such industries as breweries, tanning, paper processing, fish processing, sugar factories, coffee washing stations, and abattoirs. In addition there is some inflow of residues from the use of chemical herbicides and pesticides in selected agricultural operations in the lake catchment, and specialized industries such as gold mining are responsible for the presence of localized areas of heavy metals. The project would locate and quantify these problems, identify the sources of pollution, propose and begin to implement ameliorative measures, and strengthen existing institutions to sustain solutions in the longer term.

5.28 The population pressure is also contributing to the inflow of nutrients into the lake, which are responsible for algal buildup, oxygen depletion, and to the burgeoning water hyacinth infestation. Since the levels of fertilizer use in agricultural areas around the catchment are in general low, the main rural source of these nutrients is soil erosion, which releases nitrogen and phosphorus held in the natural soil profile. In many instances such nutrients are not available to agriculture, but are released by chemical changes once the soil is washed into the lake. From urban areas and lake shore communities, the main sources of nutrients are human waste, especially from untreated sewage. Although sewage schemes in the lake catchment are frequently inoperative or in bad repair, in some cases the nutrients are filtered out by wetlands prior to reaching the lake. Where there is no such buffering capacity, or the capacity is overloaded, there is a positive buildup of nutrients in the lake. The project will locate and quantify these problems, identify the sources of nutrients, propose and begin to implement ameliorative measures, including some innovative pilot initiatives, and strengthen existing institutions to sustain solutions in the longer term.

5.29 The area in which the project would make the most economic difference would be in heading off developing instability and possible serious collapse of the valuable lake fisheries.

Negative Impacts And How They Would Be Addressed

5.30 The main areas where activities undertaken in the project may have negative environmental impacts are the following:

- (a) measures to try to restore and stabilize the fish ecology in the lake might have unforeseen effects, because the huge, complex ecosystem is not understood completely, although knowledge of the ecosystem is better now than it was when exotic fish were introduced previously;

- (b) attempts to develop innovative aquaculture might have unforeseen effects on the ecosystem, as did the introduction of exotic species in the past;
- (c) biological agents used as the main line of long term control of water hyacinth might have unforeseen effects on other parts of the ecosystem and the catchment;
- (d) herbicides used to control water hyacinth might damage other crops, add to water pollution, kill fish, and themselves contribute to anoxia in the lake, especially in littoral areas;
- (e) attempts to reduce the inflow of pollutants into the lake might result in their having negative effects in other environments.

5.31 The following steps will be taken during project implementation, to minimise the possibilities of these negative impacts arising, or mitigate their effects:

- (a) *fish ecology* - the most important precaution is that any proposed interventions (such as changes in net sizes or other controls over the fishing effort) should be clearly defined and carefully assessed before introduction. The assessment should include specific consideration of possible unpredictable responses, and should allow for relevant peer review or independent comment. The interventions must be accompanied by projections of measurable responses in the system and methods for measuring and reporting on the relevant parameters.
- (b) *aquaculture* - the scale of any proposed aquaculture needs to be limited until the requirements and impacts of the system are well established. The onus will be on the promoters of any introduced species to demonstrate to the satisfaction of the scientific community that this will not have any adverse or unexpected effects. Therefore before any releases take place, there will be a full environmental assessment. Where systems are developed to support or reintroduce native species, the schemes should be developed at a pilot scale so that the consequences of large scale projects can be predicted and evaluated.
- (c) *biological control agents* - all biological control agents under consideration have been subjected to exhaustive field testing over twenty years in several countries. For all three control agents, the conclusion was: "there is no doubt that [the agent] is restricted to water hyacinth and that it may be introduced into regions infested with this weed without risk of damage to other plant species."⁴ The two species of weevils have been tested extensively in Kenya and Uganda, and released in both countries in lakes other than Lake Victoria. The testing protocols have been

⁴ Harley, K.L.S., The Role of Biological Control in the Management of Water Hyacinth, *Eichornia crassipes*, Biocontrol News and Information, Vol 11, No. 1, 1990, 11-22.

satisfactory, and no results different from those observed elsewhere have been noted. Any additional biological control agents available during project implementation will be subjected to similar testing protocols.

- (d) *herbicides* - herbicides used in the water hyacinth control program will be acceptable to IDA, they will be used sparingly, in strictly selected and confined areas, all persons applying such herbicides will be trained in their safe and appropriate handling and use, and mechanisms for careful monitoring of herbicide use will be established.
- (e) *pollutants* - pollution control projects must be properly designed with the necessary attention to treatment and disposal systems and to long-term financing mechanisms which will allow for the necessary maintenance and upgrading. A project specific environmental assessment will be required for these components, and for any larger investments following, to guard against the possibility that any uncontrolled dumping of domestic and industrial wastes would take place.

C. RISKS

5.32 The main risk is that the strength of the commitments by the three Governments will fail to sustain a regional environmental management program for the lake basin. This may express itself through inadequate budgetary arrangements to fund regional bodies (such as the LVFO) or coordinating agencies, erosion over time of the powers given to such institutions, or unwillingness or lack of capacity to follow-up on regional regulatory decisions or guidelines through enforcement at the national level. Since the three governments have collaborated well during program preparation, and the proposed program provides many opportunities for low-risk collaboration on technical issues, which should build confidence steadily during implementation, any waning commitment would seem likely to arise only from sources external to the program. The risk of inadequate or unforeseen results emerging from the research and studies in the program would be reduced by the appointment of an international Panel of Scientists who would review regularly scientific issues arising in the course of project implementation. In the event of fiscal crises, the project is structured so as to allow postponement of work in the pilot zones planned for the outer years of the project. In this way the essential core of lake-wide activities would be preserved, as well as the coordinated nature of the adaptive environmental management approach in at least a sub-set of the 14 pilot areas. Upon resolution of any funding crisis, work could be resumed with minimum disruption to progress.

6. AGREEMENTS REACHED AND RECOMMENDATIONS

6.1 On August 5, 1994, the Governments of Kenya, Tanzania and Uganda signed a Tripartite Agreement jointly to *prepare and implement* a Lake Victoria Environmental Management Program (LVEMP). That important agreement provided for organizational arrangements for project preparation, some of which will be continued into project implementation. In particular, the Agreement provided for a Regional Policy and Steering Committee, which has functioned during project preparation with a membership of nine at the level of Permanent Secretary, three from each country, drawn from the main Ministries dealing with environment, water, fisheries, and agriculture. The existence of this Agreement reduced, but did not eliminate the need for further assurances, which complemented and supplemented those already obtained under the Tripartite Agreement.

6.2 The three Governments and IDA have agreed the following:

- (a) the National Secretariats will prepare annual work programs, training plans, and related financing plans and submit them to the Regional Policy and Steering Committee for its approval by March 31 of each year; the annual work programs will include details of the procurement of goods and services and the procedures to be adopted for such procurement within the limits given earlier and agreed by IDA;
- (b) in its review of the annual work programs, training plans and related financing plans, the Regional Policy and Steering committee will ensure that all project components with regional implications will be implemented at a comparable pace in all three countries; following its approval of the annual programs and plans, the Regional Policy and Steering Committee will submit them, along with its proposals for ensuring coordinated implementation, to IDA for review by May 15 of each year;
- (c) a high level panel of internationally renowned scientists, with 7 members satisfactory to IDA, will be appointed by the Regional Policy and Steering Committee to serve as an advisory group for the scientific studies in the lake; they will meet at least once a year to review scientific issues arising from project implementation, maintain an up-to-date inventory of international scientific research pertinent to LVEMP programs, assist with identifying international training opportunities for researchers from the riparian countries, and be available, at the request of the Regional and Policy Steering Committee, to provide advice about specific issues;
- (d) the Lake Victoria Fisheries Organisation (LVFO) will be established by November 30, 1996;

- (e) national steering committees will be established in all three countries for the water hyacinth control program, by November 30, 1996;
- (f) any changes in the policies, procedures and core membership of the Regional Policy and Steering Committee will be acceptable to IDA;
- (g) herbicides used in the water hyacinth control program will be acceptable to IDA, they will be used sparingly, in strictly selected and confined areas, all persons applying such herbicides will be trained in their safe and appropriate handling and use, and mechanisms for careful monitoring of herbicide use will be established;
- (h) with the exception of the biological control agents for water hyacinth, no new species will be introduced into the lake without first carrying out an environmental impact assessment;
- (i) prior to implementation of any intervention likely to have a negative impact on fish ecology (such as changes in net sizes or other controls over the fishing effort), the proposed intervention will be subjected to an environmental impact assessment, with provision for public comment;
- (j) prior to implementation of any project component related to pollution control, a project - specific environmental assessment will be carried out to guard against the possibility that any uncontrolled dumping of domestic and industrial wastes would take place;
- (k) the three Governments will have the records and accounts of the project, including those for the Special Accounts, and Statements of Expenditure (SOEs), audited each fiscal year by independent auditors acceptable to IDA; and will submit to IDA the audit reports within six months after the close of the respective fiscal year; the audit reports will include a statement on the adequacy of the accounting systems and internal controls;
- (l) National Workshops coordinated by the National Secretariats and a Regional Workshop coordinated by the Regional Secretariat in Tanzania will be held in June of each year to assess implementation progress and agree on any adjustments needed;
- (m) prior to the end of July, 1997, a comprehensive review will be held with the donors, to consider the annual work plan and new financial procedures and arrangements for the forthcoming fiscal year; modifications of project design and/or procedures will be introduced as appropriate; similar reviews will be carried out annually;
- (n) prior to the end of March, 1999 a Mid-Term Review will be carried out, during which the performance of the Lake Victoria Fisheries Organisation, the three National Secretariats, and the Regional Policy and Steering Committee will be reviewed and appropriate changes made; the

review will also carry out an in-depth examination of the arrangements for community participation in project implementation; as part of the Mid-Term Review, the three Governments will prepare an updated analysis of the transboundary environmental concerns, to guide the second phase of project implementation, and set the stage for subsequent initiatives;

- (o) subject to satisfactory completion of the Levy Trust Study, the three Governments will jointly establish, by the end of July, 1998, a Levy Trust Fund into which funds raised from commercial fisheries will be placed and disbursed to support joint fisheries management and central monitoring initiatives under the project;

6.3 Prior to Grant/Credit Effectiveness:

- (a) the membership of the Regional Policy and Steering Committee will have been confirmed;
- (b) the Heads of the three National Secretariats, with qualifications and experience equivalent to the position of Deputy Principal/Permanent Secretary, will have been appointed, and the three National Secretariats will have been strengthened by the appointment of an Accountant, Disbursement and Procurement Officer, an Operations Officer and a Management Information Systems Officer;
- (c) a panel of internationally renowned scientists will have been appointed;
- (d) common standard methods for measuring and monitoring water quality will have been agreed among the three governments;
- (e) evidence satisfactory to IDA will have been provided that each of the three Governments has made budgetary allocations representing their first year contribution to the Project;
- (f) annual work plans and financial plans for the first year of the Project Implementation Plan will have been finalized and submitted to IDA.

6.4 Subject to the above assurances, the project is suitable for IDA Credits of SDR 8.9 million (US\$12.8 million equivalent) to the Government of Kenya, SDR 7.0 million (US\$10.1 million equivalent) to the Government of Tanzania, and SDR 8.4 million (US\$12.1 million equivalent) to the Government of Uganda, and for GEF Grants of SDR 8.0 million (US\$11.5 million equivalent) to the Government of Kenya, SDR 7.2 million (US\$10.3 million equivalent) to the Government of Tanzania, and SDR 9.2 million (US\$13.2 million equivalent) to the Government of Uganda.

ANNEXES

Table 1 - Kenya
Lake Victoria Environmental Management Project
Components Project Cost Summary

	(Ksh '000)					(US\$ '000)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
B. Fisheries Development										
2. Research										
fish biology and biodiversity conservation	53,882	52,709	106,591	49	8	980	958	1,938	49	8
aquaculture	29,672	23,614	53,285	44	4	539	429	969	44	4
socio-economic studies	28,767	16,691	45,458	37	4	523	303	827	37	4
database establishment	10,848	8,602	19,448	44	2	197	156	354	44	2
Subtotal Research	123,167	101,616	224,783	45	17	2,239	1,848	4,087	45	17
3. Extension										
Extension	101,673	58,600	160,272	37	12	1,849	1,065	2,914	37	12
4. Legal Framework										
establishing closed fishing areas	20,410	2,166	22,566	10	2	371	40	411	10	2
strengthening enforcement	21,903	6,826	30,731	29	2	398	161	559	29	2
Subtotal Legal Framework	42,313	11,015	53,327	21	4	769	200	970	21	4
5. Fish Levy Trust										
fish levy trust	17,398	16,781	34,179	49	3	316	305	621	49	3
Subtotal Fisheries Development	284,551	188,011	472,561	40	37	5,174	3,418	8,592	40	37
C. Water Hyacinth Control	98,207	36,729	132,936	28	10	1,749	668	2,417	28	10
D. Water Quality Management										
1. Water Quality Monitoring										
eutrophication	47,023	61,381	108,404	57	8	855	1,116	1,971	57	8
sedimentation /a	3,458	7,613	11,071	69	1	63	138	201	69	1
hydraulic conditions /b	2,921	11,922	14,843	80	1	53	217	270	80	1
Lake Victoria management model	3,963	14,966	18,928	79	1	70	272	342	79	1
Subtotal Water Quality Monitoring	57,284	95,881	153,166	63	12	1,041	1,743	2,784	63	12
2. Industrial and Municipal Waste Management										
management of industrial and municipal effluent	33,439	39,893	73,331	54	6	608	725	1,333	54	6
tertiary industrial effluent treatment /c	10,382	5,034	15,415	33	1	189	92	280	33	1
tertiary municipal effluent treatment /d	10,524	5,034	15,557	32	1	191	92	283	32	1
priority waste management investments	38,500	71,500	110,000	65	9	700	1,300	2,000	65	9
Subtotal Industrial and Municipal Waste Management	92,844	121,460	214,304	57	17	1,688	2,208	3,896	57	17
Subtotal Water Quality Management	150,109	217,341	367,450	59	28	2,729	3,952	6,681	59	28
E. Land Use and Wetland Management										
1. Land Use										
pollution loading	39,777	33,127	72,904	45	6	723	602	1,326	45	6
agro-chemicals assessment /e	7,240	8,538	15,778	54	1	132	155	287	54	1
soil and water conservation	21,247	6,005	27,252	22	2	386	109	495	22	2
catchment afforestation	44,050	8,399	52,448	16	4	801	153	954	16	4
Subtotal Land Use	112,314	56,069	168,383	33	13	2,042	1,019	3,062	33	13
2. Wetlands										
wetlands buffering capacity	29,882	30,545	60,427	51	5	543	555	1,099	51	5
sustainable use of wetlands products	18,944	8,550	27,494	31	2	344	155	500	31	2
Subtotal Wetlands	48,826	39,094	87,920	44	7	888	711	1,599	44	7
Subtotal Land Use and Wetland Management	161,140	95,163	256,303	37	20	2,930	1,730	4,660	37	20
F. Institutional Framework										
LVEMP secretariats /f	35,683	9,820	45,503	22	4	649	179	827	22	4
support to riparian universities	6,823	11,892	18,715	64	1	124	216	340	64	1
Subtotal Institutional Framework	42,506	21,712	64,218	34	5	773	395	1,168	34	5
Total BASELINE COSTS	734,512	558,956	1,293,468	43	100	13,355	10,163	23,518	43	100
Physical Contingencies	69,801	48,748	118,547	41	9	1,265	886	2,152	41	9
Price Contingencies	190,086	108,350	298,436	36	23	794	456	1,250	36	5
Total PROJECT COSTS	994,199	716,052	1,710,251	42	132	15,414	11,505	26,919	43	114

/a pilot study

/b pilot study

/c pilot project

/d pilot project

/e pilot

/f Lake Victoria Environmental Management Project

Table 2 - Kenya
Lake Victoria Environmental Management Project
Project Components by Year – Totals Including Contingencies

	Totals Including Contingencies (Ksh '000)					Totals Including Contingencies (US\$ '000)						
	1997	1998	1999	2000	2001	Total	1997	1998	1999	2000	2001	Total
A. Fisheries Development												
2. Research												
fish biology and biodiversity conservation	43,510	27,004	24,644	24,067	24,313	143,539	763	441	375	341	321	2,242
aquaculture	22,442	15,703	11,771	11,101	9,897	70,914	393	257	179	157	131	1,117
socio-economic studies	15,888	13,377	11,127	11,117	10,115	61,623	279	219	169	158	134	958
database establishment	5,651	4,764	6,264	5,200	4,975	26,853	99	78	95	74	66	412
Subtotal Research	87,491	60,848	53,806	51,484	49,300	302,929	1,534	994	819	730	652	4,729
3. Extension												
Extension	59,216	25,365	59,062	46,209	28,270	218,122	1,038	414	899	655	374	3,381
4. Legal Framework												
establishing closed fishing areas	4,966	6,860	6,008	6,609	7,270	31,713	87	112	91	94	96	480
strengthening enforcement	11,682	4,781	7,307	8,982	9,779	42,531	205	78	111	127	129	651
Subtotal Legal Framework	16,648	11,641	13,316	15,591	17,049	74,244	292	190	203	221	225	1,131
5. Fish Levy Trust												
fish levy trust	6,543	-	23,226	9,143	10,057	48,970	115	-	354	130	133	731
Subtotal Fisheries Development	169,899	97,853	149,410	122,427	104,676	644,264	2,979	1,599	2,275	1,737	1,384	9,972
B. Water Hyacinth Control	59,347	30,548	27,134	31,556	29,614	178,200	1,041	499	413	448	391	2,792
C. Water Quality Management												
1. Water Quality Monitoring												
eutrophication	57,664	19,330	22,165	22,663	21,417	143,238	1,011	316	337	321	283	2,269
sedimentation	8,383	1,403	3,786	-	-	13,572	147	23	58	-	-	228
hydraulic conditions	8,681	5,026	1,537	3,492	-	18,736	152	82	23	50	-	307
Lake Victoria management model	6,049	4,912	5,659	4,253	4,920	25,792	106	80	86	60	65	398
Subtotal Water Quality Monitoring	80,777	30,671	33,147	30,408	26,336	201,338	1,416	501	505	431	348	3,201
2. Industrial and Municipal Waste Management												
management of industrial and municipal effluent	28,340	14,916	17,788	19,410	19,789	100,242	497	244	271	275	262	1,548
tertiary industrial effluent treatment	7,327	5,357	6,085	420	385	19,575	128	88	93	6	5	320
tertiary municipal effluent treatment	7,382	5,417	6,151	420	385	19,755	129	89	94	6	5	323
priority waste management investments	8,250	5,500	55,000	41,250	-	110,000	150	100	1,000	750	-	2,000
Subtotal Industrial and Municipal Waste Management	51,299	31,190	85,024	61,500	20,559	249,572	905	520	1,457	1,037	272	4,190
Subtotal Water Quality Management	132,076	61,861	118,171	91,908	46,896	450,911	2,321	1,021	1,962	1,469	620	7,392
D. Land Use and Wetland Management												
1. Land Use												
pollution loading	24,369	17,540	19,882	20,719	17,412	99,922	427	287	303	294	230	1,541
agro-chemicals assessment	430	6,520	9,781	5,035	-	21,766	8	107	149	71	-	334
soil and water conservation	8,772	12,530	13,460	117	128	35,006	154	205	205	2	2	567
catchment afforestation	19,876	11,940	11,958	13,130	14,420	71,324	349	195	183	187	192	1,106
Subtotal Land Use	53,447	48,530	55,080	39,001	31,960	228,018	937	793	839	554	424	3,548
2. Wetlands												
wetlands buffering capacity	23,571	10,876	15,177	15,752	17,507	82,884	413	178	231	223	231	1,277
sustainable use of wetlands products	8,504	6,650	7,033	7,582	8,340	38,110	149	109	107	108	110	583
Subtotal Wetlands	32,075	17,527	22,210	23,334	25,847	120,994	562	286	338	331	342	1,859
Subtotal Land Use and Wetland Management	85,523	66,056	77,291	62,335	57,807	349,012	1,500	1,080	1,177	885	765	5,407
E. Institutional Framework												
LVEMP secretariats	13,101	10,311	12,102	13,303	14,624	63,441	230	169	184	189	194	966
support to riparian universities	11,809	2,651	2,979	3,345	3,840	24,424	204	43	45	47	51	390
Subtotal Institutional Framework	24,710	12,962	15,080	16,648	18,464	87,865	433	212	230	237	245	1,356
Total PROJECT COSTS	471,554	269,280	387,086	324,874	257,457	1,710,251	8,273	4,410	6,056	4,774	3,405	26,919

Table 3 - Kenya
Lake Victoria Environmental Management Project
Components by Financiers
(US\$'000)

	The Government of				
	Kenya	GEF	IDA	Total	
	Amount	Amount	Amount	Amount	%
B. Fisheries Development					
2. Research					
fish biology and biodiversity conservation	224	2,018	-	2,242	8.3
aquaculture	112	503	503	1,117	4.2
socio-economic studies	96	216	647	958	3.6
database establishment	41	371	-	412	1.5
Subtotal Research	473	3,107	1,149	4,729	17.6
3. Extension					
Extension	338	-	3,043	3,381	12.6
4. Legal Framework					
establishing closed fishing areas	48	-	432	480	1.8
strengthening enforcement	65	-	586	651	2.4
Subtotal Legal Framework	113	-	1,018	1,131	4.2
5. Fish Levy Trust					
fish levy trust	73	-	658	731	2.7
Subtotal Fisheries Development	997	3,107	5,868	9,972	37.0
C. Water Hyacinth Control	279	1,508	1,005	2,792	10.4
D. Water Quality Management					
1. Water Quality Monitoring					
eutrophication	227	2,042	-	2,269	8.4
sedimentation	23	205	-	228	0.8
hydraulic conditions	31	277	-	307	1.1
Lake Victoria management model	40	358	-	398	1.5
Subtotal Water Quality Monitoring	320	2,881	-	3,201	11.9
2. Industrial and Municipal Waste Management					
management of industrial and municipal effluent	155	-	1,393	1,548	5.8
tertiary industrial effluent treatment	32	-	288	320	1.2
tertiary municipal effluent treatment	32	-	290	323	1.2
priority waste management investments	350	-	1,650	2,000	7.4
Subtotal Industrial and Municipal Waste Management	569	-	3,621	4,190	15.6
Subtotal Water Quality Management	889	2,881	3,621	7,392	27.5
E. Land Use and Wetland Management					
1. Land Use					
pollution loading	154	1,386	-	1,541	5.7
agro-chemicals assessment	33	-	301	334	1.2
soil and water conservation	57	-	510	567	2.1
catchment afforestation	111	-	995	1,106	4.1
Subtotal Land Use	355	1,386	1,806	3,548	13.2
2. Wetlands					
wetlands buffering capacity	128	1,149	-	1,277	4.7
sustainable use of wetlands products	58	262	262	583	2.2
Subtotal Wetlands	186	1,411	262	1,859	6.9
Subtotal Land Use and Wetland Management	541	2,798	2,069	5,407	20.1
F. Institutional Framework					
LVEMP secretariats	97	869	-	966	3.6
support to riparian universities	39	351	-	390	1.5
Subtotal Institutional Framework	136	1,220	-	1,356	5.0
Total Disbursement	2,842	11,514	12,563	26,919	100.0

Table 1 - Tanzania
Lake Victoria Environmental Management Project
Components Project Cost Summary

	(Tsh '000)					(US\$ '000)				
	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs	Local	Foreign	Total	% Foreign Exchange	% Total Base Costs
A. Fisheries Development										
2. Research										
fish biology and biodiversity conservation	374,061.0	697,524.0	1,071,585.0	65	8	623.4	1,162.5	1,786.0	65	8
aquaculture	276,875.3	243,272.3	520,147.5	47	4	461.5	405.5	866.9	47	4
socio-economic studies	244,020.0	184,065.0	428,085.0	43	3	406.7	306.8	713.5	43	3
database establishment	52,170.0	109,590.0	161,760.0	68	1	87.0	182.7	269.6	68	1
Subtotal Research	947,126.3	1,234,451.3	2,181,577.5	57	17	1,578.5	2,057.4	3,636.0	57	17
3. Extension										
Extension	862,993.4	830,623.9	1,693,617.3	49	13	1,438.3	1,384.4	2,822.7	49	13
4. Legal Framework										
establishing closed fishing areas	146,331.0	24,900.0	171,231.0	15	1	243.9	41.5	285.4	15	1
strengthening enforcement	203,453.7	222,100.8	425,554.5	52	3	339.1	370.2	709.3	52	3
Subtotal Legal Framework	349,784.7	247,000.8	596,785.5	41	5	583.0	411.7	994.6	41	5
5. Fish Levy Trust										
fish levy trust	133,203.0	183,060.0	316,263.0	58	2	222.0	305.1	527.1	58	2
Subtotal Fisheries Development	2,293,107.3	2,495,136.0	4,788,243.3	52	38	3,821.8	4,158.6	7,980.4	52	38
B. Water Hyacinth Control	1,008,189.0	357,949.5	1,366,138.5	26	11	1,680.3	596.6	2,276.9	26	11
C. Water Quality Management										
1. Water Quality Monitoring										
eutrophication	505,328.3	822,543.8	1,327,872.0	62	10	842.2	1,370.9	2,213.1	62	10
sedimentation	32,909.4	69,609.0	102,518.4	68	1	54.8	116.0	170.9	68	1
hydraulic conditions	23,736.0	159,456.0	183,192.0	87	1	39.6	265.8	305.3	87	1
Lake Victoria Management Model	54,678.0	151,620.0	206,298.0	73	2	91.1	252.7	343.8	73	2
Subtotal Water Quality Monitoring	616,651.7	1,203,228.8	1,819,880.4	66	14	1,027.8	2,005.4	3,033.1	66	14
2. Industrial and Municipal Waste Management										
management of industrial and municipal effluent	359,055.0	357,412.5	716,467.5	50	6	598.4	595.7	1,194.1	50	6
tertiary industrial effluent treatment	80,973.0	53,112.0	134,085.0	40	1	135.0	88.5	223.5	40	1
tertiary municipal effluent treatment	65,961.0	53,112.0	119,073.0	45	1	109.9	88.5	198.5	45	1
priority waste management investments	192,000.0	408,000.0	600,000.0	68	5	320.0	680.0	1,000.0	68	5
Subtotal Industrial and Municipal Waste Management	697,989.0	871,636.5	1,569,625.5	56	12	1,163.3	1,452.7	2,616.0	56	12
Subtotal Water Quality Management	1,314,640.7	2,074,865.3	3,389,505.9	61	27	2,191.1	3,458.1	5,649.2	61	27
D. Land Use and Wetland Management										
1. Land Use										
pollution loading	334,051.5	303,135.0	637,186.5	48	5	556.8	505.2	1,062.0	48	5
agro-chemicals assessment	64,684.5	113,514.0	178,198.5	64	1	107.8	189.2	297.0	64	1
soil and water conservation	235,221.0	23,664.0	258,885.0	9	2	392.0	39.4	431.5	9	2
catchment afforestation	342,180.0	90,120.0	432,300.0	21	3	570.3	150.2	720.5	21	3
Subtotal Land Use	976,137.0	530,433.0	1,506,570.0	35	12	1,626.9	884.1	2,511.0	35	12
2. Wetlands										
wetlands buffering capacity	378,050.8	221,812.4	599,863.2	37	5	630.1	369.7	999.8	37	5
sustainable use of wetlands products	211,115.0	43,107.4	254,222.4	17	2	351.9	71.8	423.7	17	2
Subtotal Wetlands	589,165.8	264,919.8	854,085.6	31	7	981.9	441.5	1,423.5	31	7
Subtotal Land Use and Wetland Management	1,565,302.8	795,352.8	2,360,655.6	34	19	2,608.8	1,325.6	3,934.4	34	19
E. Institutional Framework										
1. LVEMP secretariats	464,646.0	62,604.0	527,250.0	12	4	774.4	104.3	878.8	12	4
2. support to riparian universities	46,894.5	128,494.5	175,389.0	73	1	78.2	214.2	292.3	73	1
3. pollution disaster contingency	-	90,000.0	90,000.0	100	1	-	150.0	150.0	100	1
Subtotal Institutional Framework	511,540.5	281,098.5	792,639.0	35	6	852.6	468.5	1,321.1	35	6
Total BASELINE COSTS	6,692,780.3	6,004,402.0	12,697,182.3	47	100	11,154.8	10,007.3	21,162.0	47	100
Physical Contingencies	634,074.7	443,117.1	1,077,191.7	41	8	1,056.8	738.5	1,795.3	41	8
Price Contingencies	7,634,861.9	6,166,640.9	13,801,502.8	45	109	-808.8	462.0	-346.8	-133	-2
Total PROJECT COSTS	14,961,716.8	12,614,160.0	27,575,876.8	46	217	11,402.6	11,207.9	22,610.5	50	107

Table 2 - Tanzania
Lake Victoria Environmental Management Project
Project Components by Year – Totals Including Contingencies

	Totals Including Contingencies (Tsh '000)					Totals Including Contingencies (US\$ '000)					Total	
	1997	1998	1999	2000	2001	1997	1998	1999	2000	2001		
A. Fisheries Development												
2. Research												
fish biology and biodiversity conservation	431,320.1	621,278.7	471,334.4	453,535.2	543,217.3	2,520,685.6	627.5	329.5	413.4	308.9	287.3	1,966.7
aquaculture	199,057.7	272,431.6	259,834.1	193,062.6	201,125.6	1,125,511.5	289.6	144.5	227.9	131.5	106.4	899.9
socio-economic studies	152,822.7	223,268.2	170,575.4	201,775.6	213,534.8	961,976.8	222.3	118.4	149.6	137.4	112.9	740.8
database establishment	47,957.5	95,994.8	88,466.9	81,559.6	89,064.0	403,042.8	69.8	50.9	77.6	55.6	47.1	300.9
Subtotal Research	831,158.0	1,212,973.2	990,210.8	929,933.1	1,046,941.6	5,011,216.7	1,209.1	643.4	868.6	633.4	553.7	3,908.3
3. Extension												
Extension	598,488.7	474,111.5	903,009.2	1,184,067.9	725,356.7	3,885,033.9	870.7	251.5	792.1	806.5	383.7	3,104.4
4. Legal Framework												
establishing closed fishing areas	40,635.7	83,326.3	70,803.7	93,460.9	123,368.4	411,595.0	59.1	44.2	62.1	63.7	65.3	294.3
strengthening enforcement	213,206.2	122,170.1	136,091.0	208,433.8	271,582.6	951,483.7	310.2	64.8	119.4	142.0	143.6	780.0
Subtotal Legal Framework	253,841.9	205,496.4	206,894.6	301,894.8	394,951.0	1,363,078.6	369.3	109.0	181.5	205.6	208.9	1,074.3
5. Fish Levy Trust												
fish levy trust	78,856.0	-	302,720.1	159,066.9	233,211.4	773,854.5	114.7	-	265.5	108.3	123.3	612.0
Subtotal Fisheries Development	1,762,344.6	1,892,581.1	2,402,834.7	2,574,962.7	2,400,460.8	11,033,183.8	2,563.8	1,003.9	2,107.7	1,753.9	1,269.6	8,698.9
B. Water Hyacinth Control	632,232.1	566,845.2	449,200.1	564,014.9	644,829.9	2,857,122.1	919.7	300.7	394.0	384.2	341.1	2,339.7
C. Water Quality Management												
1. Water Quality Monitoring												
eutrophication	638,129.8	461,465.8	475,899.2	696,210.3	684,979.1	2,956,684.3	928.3	244.8	417.4	474.2	362.3	2,427.1
sedimentation	84,988.0	19,350.6	56,272.9	-	-	160,611.4	123.6	10.3	49.4	-	-	183.3
hydraulic conditions	98,963.3	129,433.0	61,757.0	97,199.2	16,422.4	403,774.9	144.0	68.7	54.2	66.2	8.7	341.7
Lake Victoria Management Model	68,300.8	139,791.8	99,901.5	92,251.2	125,908.7	526,154.1	99.4	74.2	87.6	62.8	66.6	390.6
Subtotal Water Quality Monitoring	890,381.9	750,041.1	693,830.7	885,660.8	827,310.2	4,047,224.8	1,295.3	397.8	608.6	603.3	437.6	3,342.6
2. Industrial and Municipal Waste Management												
management of industrial and municipal effluent	293,181.4	276,348.0	277,645.3	369,557.6	439,392.4	1,656,124.7	426.5	146.6	243.5	251.7	232.4	1,300.8
tertiary industrial effluent treatment	69,129.8	84,345.0	91,007.7	-	-	244,482.6	100.6	44.7	79.8	-	-	225.1
tertiary municipal effluent treatment	62,744.7	75,916.7	79,882.3	-	-	218,543.7	91.3	40.3	70.1	-	-	201.6
priority waste management investments	75,000.0	135,000.0	-	240,000.0	150,000.0	600,000.0	125.0	225.0	-	400.0	250.0	1,000.0
Subtotal Industrial and Municipal Waste Management	500,055.9	571,609.8	448,535.3	609,557.6	589,392.4	2,719,151.0	743.4	456.6	393.4	651.7	482.4	2,727.5
Subtotal Water Quality Management	1,390,437.8	1,321,650.9	1,142,366.0	1,495,218.4	1,416,702.6	6,766,375.8	2,038.6	854.4	1,002.1	1,255.0	920.0	6,070.1
D. Land Use and Wetland Management												
1. Land Use												
pollution loading	193,636.5	314,533.4	294,933.4	368,878.1	349,938.7	1,521,920.0	281.7	166.8	258.7	251.3	185.1	1,143.6
agro-chemicals assessment	2,543.2	165,668.4	134,219.1	155,095.0	-	457,525.7	3.7	87.9	117.7	105.6	-	315.0
soil and water conservation	90,888.8	174,224.4	203,574.6	-	-	468,687.8	132.2	92.4	178.6	-	-	403.2
catchment afforestation	150,114.6	153,393.9	184,184.0	200,862.4	311,624.9	1,000,179.8	218.4	81.4	161.6	136.8	164.8	762.9
Subtotal Land Use	437,183.1	807,820.1	816,911.1	724,835.4	661,563.5	3,448,313.2	636.0	428.5	716.6	493.7	349.9	2,624.7
2. Wetlands												
wetlands buffering capacity	303,459.8	330,016.3	350,393.6	59,488.7	84,335.9	1,127,694.4	441.5	175.1	307.4	40.5	44.6	1,009.0
sustainable use of wetlands products	93,593.7	94,248.4	106,478.4	120,173.7	158,629.3	573,123.5	136.2	50.0	93.4	81.9	83.9	445.3
Subtotal Wetlands	397,053.5	424,264.8	456,872.0	179,662.5	242,965.1	1,700,817.9	577.6	225.0	400.8	122.4	128.5	1,454.3
Subtotal Land Use and Wetland Management	834,236.6	1,232,084.9	1,273,783.1	904,497.9	904,528.7	5,149,131.1	1,213.6	653.5	1,117.3	616.1	478.4	4,079.0
E. Institutional Framework												
1. LVEMP secretariats	131,751.6	167,071.3	224,455.6	358,327.7	406,432.1	1,288,038.4	191.7	88.6	196.9	244.1	215.0	936.2
2. support to riparian universities	106,468.5	58,524.5	48,114.8	64,938.0	89,141.1	367,186.8	154.9	31.0	42.2	44.2	47.1	319.5
3. pollution disaster contingency	114,838.8	-	-	-	-	114,838.8	167.1	-	-	-	-	167.1
Subtotal Institutional Framework	353,058.9	225,595.8	272,570.4	423,265.7	495,573.2	1,770,064.0	513.6	119.7	239.1	288.3	262.1	1,422.8
Total PROJECT COSTS	4,972,310.0	5,238,757.8	5,540,754.3	5,961,959.5	5,862,095.2	27,575,876.8	7,249.4	2,932.2	4,860.2	4,297.4	3,271.2	22,610.5

Table 3 - Tanzania
Lake Victoria Environmental Management Project
Components by Financiers
(US\$'000)

	The Government of				
	Tanzania	GEF	IDA	Total	
	Amount	Amount	Amount	Amount	%
A. Fisheries Development					
2. Research					
fish biology and biodiversity conservation	198.1	1,768.6	-	1,966.7	8.7
aquaculture	90.0	405.0	405.0	899.9	4.0
socio-economic studies	74.1	166.7	500.0	740.8	3.3
database establishment	30.1	270.9	-	300.9	1.3
Subtotal Research	392.2	2,611.1	905.0	3,908.3	17.3
3. Extension					
Extension	310.4	-	2,794.0	3,104.4	13.7
4. Legal Framework					
establishing closed fishing areas	29.4	-	264.9	294.3	1.3
strengthening enforcement	78.0	-	702.0	780.0	3.4
Subtotal Legal Framework	107.4	-	966.9	1,074.3	4.8
5. Fish Levy Trust					
fish levy trust	61.2	-	550.8	612.0	2.7
Subtotal Fisheries Development	871.3	2,611.1	5,216.5	8,698.9	38.5
B. Water Hyacinth Control	234.0	1,263.4	842.3	2,339.7	10.3
C. Water Quality Management					
1. Water Quality Monitoring					
eutrophication	242.7	2,184.4	-	2,427.1	10.7
sedimentation	18.3	164.9	-	183.3	0.8
hydraulic conditions	34.2	307.5	-	341.7	1.5
Lake Victoria Management Model	39.1	351.5	-	390.6	1.7
Subtotal Water Quality Monitoring	334.3	3,008.3	-	3,342.6	14.8
2. Industrial and Municipal Waste Management					
management of industrial and municipal effluent	130.1	-	1,170.7	1,300.8	5.8
tertiary industrial effluent treatment	22.5	-	202.6	225.1	1.0
tertiary municipal effluent treatment	20.2	-	181.5	201.6	0.9
priority waste management investments	160.0	-	840.0	1,000.0	4.4
Subtotal Industrial and Municipal Waste Management	332.8	-	2,394.8	2,727.5	12.1
Subtotal Water Quality Management	667.0	3,008.3	2,394.8	6,070.1	26.8
D. Land Use and Wetland Management					
1. Land Use					
pollution loading	114.4	1,029.2	-	1,143.6	5.1
agro-chemicals assessment	31.5	-	283.5	315.0	1.4
soil and water conservation	40.3	-	362.9	403.2	1.8
catchment afforestation	76.3	-	686.7	762.9	3.4
Subtotal Land Use	262.5	1,029.2	1,333.0	2,624.7	11.6
2. Wetlands					
wetlands buffering capacity	100.9	908.1	-	1,009.0	4.5
sustainable use of wetlands products	44.5	200.4	200.4	445.3	2.0
Subtotal Wetlands	145.4	1,108.5	200.4	1,454.3	6.4
Subtotal Land Use and Wetland Management	407.9	2,137.7	1,533.4	4,079.0	18.0
E. Institutional Framework					
1. LVEMP secretariats	93.6	842.6	-	936.2	4.1
2. support to riparian universities	32.0	287.6	-	319.5	1.4
3. pollution disaster contingency	16.7	150.4	-	167.1	0.7
Subtotal Institutional Framework	142.3	1,280.5	-	1,422.8	6.3
Total Disbursement	2,322.5	10,301.1	9,987.0	22,610.5	100.0

Table 1 - Uganda
Lake Victoria Environmental Management Project
Components Project Cost Summary

	(Ush '000)			(US\$ '000)			% Foreign Exchange	% Total Base Costs
	Local	Foreign	Total	Local	Foreign	Total		
A. Fisheries Development								
1. Fisheries Management (LVFO)								
Lake Victoria Fisheries Office	314,400.0	1,649,100.0	1,963,500.0	314.4	1,649.1	1,963.5	84	8
2. Fisheries Research								
Fish Biology and Biodiversity Conservation	1,014,130.0	1,043,860.0	2,057,990.0	1,014.1	1,043.9	2,058.0	51	8
Aquaculture	543,546.3	402,733.8	946,280.0	543.5	402.7	946.3	43	4
Socio-Economics Studies	402,610.0	438,575.0	841,185.0	402.6	438.6	841.2	52	3
Database	114,675.0	119,300.0	233,975.0	114.7	119.3	234.0	51	1
Subtotal Fisheries Research	2,074,961.3	2,004,468.8	4,079,430.0	2,075.0	2,004.5	4,079.4	49	17
3. Fisheries Extension								
Fisheries Extension	1,933,119.3	1,529,933.2	3,463,052.5	1,933.1	1,529.9	3,463.1	44	14
4. Legal Framework								
Establishing Closed Fishing Areas	338,610.0	31,750.0	370,360.0	338.6	31.8	370.4	9	2
Strengthening Enforcement	500,417.0	324,568.0	824,985.0	500.4	324.6	825.0	39	3
Subtotal Legal Framework	839,027.0	356,318.0	1,195,345.0	839.0	356.3	1,195.3	30	5
5. Fish Levy Trust								
Fish Levy Trust	264,680.0	342,500.0	607,180.0	264.7	342.5	607.2	56	2
Subtotal Fisheries Development	5,426,187.6	5,882,320.0	11,308,507.5	5,426.2	5,882.3	11,308.5	52	46
B. Water Hyacinth Control	1,993,690.0	777,182.5	2,770,872.5	1,993.7	777.2	2,770.9	28	11
C. Water Quality Management								
1. Water Quality Monitoring								
Eutrophication	1,022,397.5	922,305.0	1,944,702.5	1,022.4	922.3	1,944.7	47	8
Sedimentation	34,441.5	110,015.0	144,456.5	34.4	110.0	144.5	76	1
Hydraulic Conditions	45,675.0	216,760.0	262,435.0	45.7	216.8	262.4	83	1
Lake Victoria Model	54,535.0	264,590.0	319,125.0	54.5	264.6	319.1	83	1
Subtotal Water Quality Monitoring	1,157,049.0	1,513,670.0	2,670,719.0	1,157.0	1,513.7	2,670.7	57	11
2. Industrial and Municipal Waste Management								
Management of Industrial and Municipal Effluent	665,022.5	575,887.5	1,240,910.0	665.0	575.9	1,240.9	46	5
Tertiary Industrial Effluent Treatment (pilot)	156,657.5	79,520.0	236,177.5	156.7	79.5	236.2	34	1
Tertiary Municipal Effluent Treatment (pilot)	161,237.5	79,520.0	240,757.5	161.2	79.5	240.8	33	1
Priority Waste Management Investments	240,000.0	760,000.0	1,000,000.0	240.0	760.0	1,000.0	76	4
Subtotal Industrial and Municipal Waste Management	1,222,917.5	1,494,927.5	2,717,845.0	1,222.9	1,494.9	2,717.8	55	11
Subtotal Water Quality Management	2,379,966.5	3,008,597.5	5,388,564.0	2,380.0	3,008.6	5,388.6	56	22
D. Land Use and Wetland Management								
1. Land use								
Pollution Loading	681,817.5	495,625.0	1,177,442.5	681.8	495.6	1,177.4	42	5
Agro-Chemicals Assessment (pilot)	103,888.0	79,940.0	183,828.0	103.9	79.9	183.8	43	1
Soil and Water Conservation (pilot)	365,105.0	33,680.0	398,785.0	365.1	33.7	398.8	8	2
Catchment Afforestation	552,712.5	248,600.0	801,312.5	552.7	248.6	801.3	31	3
Subtotal Land use	1,703,523.0	857,845.0	2,561,368.0	1,703.5	857.8	2,561.4	33	10
2. Wetlands								
Buffering Capacity of Wetlands	577,359.9	414,666.2	992,026.0	577.4	414.7	992.0	42	4
Sustainable Use of Wetland Products	273,082.4	139,345.6	412,428.0	273.1	139.3	412.4	34	2
Subtotal Wetlands	850,442.3	554,011.8	1,404,454.0	850.4	554.0	1,404.5	39	6
Subtotal Land Use and Wetland Management	2,553,965.3	1,411,856.8	3,965,822.0	2,554.0	1,411.9	3,965.8	36	16
E. Institutional Framework								
1 LVEMP Secretariats	551,295.0	179,040.0	730,335.0	551.3	179.0	730.3	25	3
2 Support to Riparian Universities	117,142.5	197,932.5	315,075.0	117.1	197.9	315.1	63	1
Subtotal Institutional Framework	668,437.5	376,972.5	1,045,410.0	668.4	377.0	1,045.4	36	4
Total BASELINE COSTS	13,022,246.8	11,456,929.2	24,479,176.0	13,022.2	11,456.9	24,479.2	47	100
Physical Contingencies	1,228,152.9	979,151.2	2,207,304.1	1,228.2	979.2	2,207.3	44	9
Price Contingencies	2,728,406.8	1,913,387.9	4,641,794.7	2,728.4	1,913.4	4,641.8	41	6
Total PROJECT COSTS	16,978,806.6	14,349,468.2	31,328,274.8	16,978.8	14,349.5	31,328.3	46	115

**Table 2 - Uganda
Lake Victoria Environmental Management Project
Project Components by Year – Totals Including Contingencies**

	Totals Including Contingencies (Ush '000)					Totals Including Contingencies (US\$ '000)						
	1997	1998	1999	2000	2001	Total	1997	1998	1999	2000	2001	Total
A. Fisheries Development												
1. Fisheries Management (LVFO)												
Lake Victoria Fisheries Office	619,449.7	455,272.7	491,712.3	492,139.5	531,509.6	2,590,083.9	603.1	420.7	431.2	409.6	419.8	2,284.4
2. Fisheries Research												
Fish Biology and Biodiversity Conservation	806,447.5	501,565.5	488,889.5	438,047.9	436,742.2	2,649,692.6	785.1	463.5	409.4	364.6	345.0	2,367.6
Aquaculture	377,743.9	272,947.6	212,417.3	183,573.5	156,532.9	1,203,215.1	367.8	252.2	186.3	152.8	123.6	1,082.7
Socio-Economics Studies	287,314.7	240,744.3	196,625.7	193,217.9	173,313.7	1,091,216.3	279.7	222.5	172.4	160.8	136.9	972.3
Database	72,393.1	55,046.6	78,131.4	53,399.7	45,220.4	302,191.2	70.5	50.9	66.8	44.4	35.7	268.3
Subtotal Fisheries Research	1,543,899.1	1,070,303.9	952,063.9	868,239.0	811,809.2	5,246,315.2	1,503.1	989.0	834.9	722.6	641.2	4,690.8
3. Fisheries Extension												
Fisheries Extension	1,161,588.8	487,353.4	1,161,660.5	1,209,444.7	516,977.5	4,537,024.9	1,130.9	450.3	1,018.7	1,006.6	408.4	4,014.9
4. Legal Framework												
Establishing Closed Fishing Areas	80,162.4	86,575.0	120,188.6	100,981.5	109,060.0	496,967.5	78.0	80.0	105.4	84.0	86.1	433.6
Strengthening Enforcement	392,504.0	148,634.9	160,527.7	173,370.0	187,239.4	1,062,275.9	382.1	137.3	140.8	144.3	147.9	952.4
Subtotal Legal Framework	472,666.3	235,209.8	280,716.3	274,351.5	296,299.4	1,559,243.4	460.2	217.3	246.2	228.3	234.0	1,386.0
5. Fish Levy Trust												
Fish Levy Trust	117,831.9	-	390,894.9	151,078.9	163,165.0	822,970.8	114.7	-	342.8	125.7	128.9	712.1
Subtotal Fisheries Development	3,915,436.0	2,248,139.9	3,277,048.0	2,995,253.5	2,319,760.9	14,755,638.2	3,811.9	2,077.3	2,873.7	2,492.9	1,832.3	13,088.2
B. Water Hyacinth Control	1,172,444.0	749,350.6	513,255.8	563,581.8	529,151.5	3,527,783.7	1,141.9	692.7	450.1	469.0	418.0	3,171.7
C. Water Quality Management												
1. Water Quality Monitoring												
Eutrophication	957,443.7	349,163.0	391,363.6	391,134.4	372,528.8	2,461,633.5	932.1	322.6	343.2	325.5	294.3	2,217.7
Sedimentation	82,510.4	19,582.2	62,528.4	-	-	174,621.0	90.1	18.1	54.8	-	-	163.0
Hydraulic Conditions	151,304.9	83,895.0	29,356.0	53,600.2	4,311.2	322,467.2	147.3	77.5	25.7	44.6	3.4	296.6
Lake Victoria Model	243,730.4	64,862.5	70,054.0	-	-	378,646.9	237.3	59.9	61.4	-	-	358.7
Subtotal Water Quality Monitoring	1,444,989.3	517,502.7	553,302.0	444,734.6	376,840.0	3,337,368.6	1,406.8	478.2	485.2	370.1	297.7	3,038.0
2. Industrial and Municipal Waste Management												
Management of Industrial and Municipal Effluent	449,591.7	237,308.3	306,986.5	329,084.7	297,925.7	1,620,896.9	437.7	219.3	269.2	273.9	235.3	1,435.4
Tertiary Industrial Effluent Treatment (pilot)	115,890.2	73,899.9	86,172.3	5,188.0	6,016.9	287,167.3	112.8	68.3	75.6	4.3	4.8	265.7
Tertiary Municipal Effluent Treatment (pilot)	116,874.0	77,433.5	87,319.9	5,188.0	6,016.9	292,832.3	113.8	71.5	76.6	4.3	4.8	271.0
Priority Waste Management Investments	300,000.0	700,000.0	-	-	-	1,000,000.0	300.0	700.0	-	-	-	1,000.0
Subtotal Industrial and Municipal Waste Management	982,355.8	1,088,641.8	480,478.7	339,460.7	309,959.5	3,200,896.5	964.3	1,059.1	421.3	282.5	244.8	2,972.1
Subtotal Water Quality Management	2,427,345.1	1,606,144.5	1,033,780.7	784,195.2	686,799.5	6,538,265.0	2,371.1	1,537.3	906.5	652.7	542.5	6,010.1
D. Land Use and Wetland Management												
1. Land use												
Pollution Loading	368,588.2	283,162.7	314,359.1	320,135.7	248,577.2	1,534,822.9	358.8	261.6	275.7	266.4	196.3	1,358.9
Agro-Chemicals Assessment (pilot)	7,429.0	87,937.0	98,783.9	40,484.7	-	234,634.6	7.2	81.3	86.6	33.7	-	208.8
Soil and Water Conservation (pilot)	130,775.1	175,151.1	182,531.3	1,857.1	2,005.6	492,320.2	127.3	161.9	180.2	1.5	1.6	452.5
Catchment Afforestation	274,304.6	168,594.3	202,099.1	182,239.3	227,946.3	1,055,183.5	267.1	155.8	177.2	151.7	180.1	931.8
Subtotal Land use	781,097.0	714,845.1	797,773.3	544,716.8	478,529.1	3,316,961.3	760.5	660.6	699.7	453.3	378.0	2,952.0
2. Wetlands												
Buffering Capacity of Wetlands	399,349.7	170,371.6	234,847.6	263,273.1	221,065.0	1,288,907.0	388.8	157.4	205.9	219.1	174.6	1,145.9
Sustainable Use of Wetland Products	125,249.8	100,917.6	84,679.1	114,829.8	108,452.1	544,128.3	121.9	93.2	83.0	95.6	85.7	479.4
Subtotal Wetlands	524,599.5	271,289.2	329,526.7	378,102.8	329,517.1	1,833,035.3	510.7	250.7	288.0	314.7	260.3	1,625.3
Subtotal Land Use and Wetland Management	1,305,696.4	986,134.3	1,127,300.1	922,819.6	808,046.2	5,149,996.6	1,271.2	911.3	988.7	768.0	638.3	4,577.4
E. Institutional Framework												
1. LVEMP Secretariats	219,469.9	188,003.0	179,496.3	193,858.2	209,366.8	988,196.2	213.7	153.4	157.4	161.3	165.4	851.2
2. Support to Riparian Universities	188,794.4	40,824.0	44,955.9	49,719.6	56,301.3	388,395.2	191.6	37.5	39.4	41.4	44.5	354.4
Subtotal Institutional Framework	418,264.3	208,827.0	224,452.2	243,577.9	265,668.0	1,356,591.4	405.3	190.9	196.8	202.7	209.8	1,205.6
Total PROJECT COSTS	9,237,185.9	5,798,396.2	6,175,838.8	5,509,427.9	4,609,426.0	31,328,274.8	9,001.3	5,409.5	5,415.9	4,585.3	3,640.9	28,052.9

Table 3 - Uganda
Lake Victoria Environmental Management Project
Components by Financiers
(US\$'000)

	The Government of				
	Uganda	GEF	IDA	Total	%
	Amount	Amount	Amount	Amount	
A. Fisheries Development					
1. Fisheries Management (LVFO)					
Lake Victoria Fisheries Office	228.4	2,055.9	-	2,284.4	8.1
2. Fisheries Research					
Fish Biology and Biodiversity Conservation	236.8	2,130.8	-	2,367.6	8.4
Aquaculture	108.3	487.2	487.2	1,082.7	3.9
Socio-Economics Studies	97.2	218.8	656.3	972.3	3.5
Database	26.8	241.4	-	268.3	1.0
Subtotal Fisheries Research	469.1	3,078.2	1,143.5	4,690.8	16.7
3. Fisheries Extension					
Fisheries Extension	401.5	-	3,613.4	4,014.9	14.3
4. Legal Framework					
Establishing Closed Fishing Areas	43.4	-	390.3	433.6	1.5
Strengthening Enforcement	95.2	-	857.2	952.4	3.4
Subtotal Legal Framework	138.6	-	1,247.4	1,386.0	4.9
5. Fish Levy Trust					
Fish Levy Trust	71.2	-	640.9	712.1	2.5
Subtotal Fisheries Development	1,308.8	5,134.1	6,645.2	13,088.2	46.7
B. Water Hyacinth Control	317.2	1,712.7	1,141.8	3,171.7	11.3
C. Water Quality Management					
1. Water Quality Monitoring					
Eutrophication	221.8	1,996.0	-	2,217.7	7.9
Sedimentation	16.3	146.7	-	163.0	0.6
Hydraulic Conditions	29.9	268.7	-	298.6	1.1
Lake Victoria Model	35.9	322.8	-	358.7	1.3
Subtotal Water Quality Monitoring	303.8	2,734.2	-	3,038.0	10.8
2. Industrial and Municipal Waste Management					
Management of Industrial and Municipal Effluent	143.5	-	1,291.9	1,435.4	5.1
Tertiary Industrial Effluent Treatment (pilot)	26.6	-	239.2	265.7	0.9
Tertiary Municipal Effluent Treatment (pilot)	27.1	-	243.9	271.0	1.0
Priority Waste Management Investments	120.0	-	880.0	1,000.0	3.6
Subtotal Industrial and Municipal Waste Management	317.2	-	2,654.9	2,972.1	10.6
Subtotal Water Quality Management	621.0	2,734.2	2,654.9	6,010.1	21.4
D. Land Use and Wetland Management					
1. Land use					
Pollution Loading	135.9	1,223.0	-	1,358.9	4.8
Agro-Chemicals Assessment (pilot)	20.9	-	187.9	208.8	0.7
Soil and Water Conservation (pilot)	45.3	-	407.3	452.5	1.6
Catchment Afforestation	93.2	-	838.6	931.8	3.3
Subtotal Land use	295.2	1,223.0	1,433.8	2,952.0	10.5
2. Wetlands					
Buffering Capacity of Wetlands	114.6	1,031.3	-	1,145.9	4.1
Sustainable Use of Wetland Products	47.9	215.8	215.8	479.4	1.7
Subtotal Wetlands	162.5	1,247.1	215.8	1,625.3	5.8
Subtotal Land Use and Wetland Management	457.7	2,470.1	1,649.5	4,577.4	16.3
E. Institutional Framework					
1. LVEMP Secretariats	85.1	766.1	-	851.2	3.0
2. Support to Riparian Universities	35.4	319.0	-	354.4	1.3
Subtotal Institutional Framework	120.6	1,085.0	-	1,205.6	4.3
Total Disbursement	2,825.3	13,136.1	12,091.5	28,052.9	100.0

Annex 2

KENYA, TANZANIA, AND UGANDA

LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT

Estimated Schedule of Disbursement (GEF and IDA)
(US\$ million)

IDA FY	Semester	Disbursement	Cumulative Disbursement	% Total
1997	1	0.0	0.0	0
	2	6.8	6.8	10
1998	1	6.8	13.6	19
	2	7.2	20.8	30
1999	1	7.2	28.0	40
	2	7.6	35.6	51
2000	1	7.6	43.2	62
	2	7.1	50.3	72
2001	1	7.1	57.4	82
	2	4.8	62.2	89
2002	1	4.8	67.0	96
	2	2.0	69.0	99
2003	1	1.0	70.0	100

Summary of Disbursement Schedule
Estimated GEF/IDA Disbursements

KENYA

Category	GEF Grant (US\$ m)	IDA Credit (US\$ m)	Percent of Financing
1. Civil Works	0.1	1.5	100% of Foreign Expenditures and 90% of Local Expenditures
2. Vehicles and Equipment	2.7	2.2	100% of Foreign Expenditures and 90% of Local Expenditures
3. Consultants & Training	3.3	2.5	100 %
4. Micro-projects		0.7	90 %
5. Operating Costs	4.4	4.6	90 %
6. Unallocated	1.0	1.3	
Total	11.5	12.8	

TANZANIA

Category	GEF Grant (US\$ m)	IDA Credit (US\$ m)	Percent of Financing
1. Civil Works	0.1	0.7	100% of Foreign Expenditures and 90% of Local Expenditures
2. Vehicles and Equipment	2.1	1.7	100% of Foreign Expenditures and 90% of Local Expenditures
3. Consultants & Training	3.5	2.2	100 %
4. Micro-projects		0.8	90 %
5. Operating Costs	3.5	3.7	90 %
6. Unallocated	1.1	1.0	
Total	10.3	10.1	

UGANDA

Category	GEF Grant (US\$ m)	IDA Credit (US\$ m)	Percent of Financing
1. Civil Works	0.3	0.6	100% of Foreign Expenditures and 90% of Local Expenditures
2. Vehicles and Equipment	2.5	2.2	100% of Foreign Expenditures and 90% of Local Expenditures
3. Consultants & Training	4.3	2.5	100 %
4. Micro-projects		1.0	90 %
5. Operating costs	4.8	4.6	90 %
6. Unallocated	1.3	1.2	
Total	13.2	12.1	

Kenya
Lake Victoria Environmental Management Project
Summary of Proposed Procurement Arrangements
(US\$ million)

Item	ICB	NCB	Other	Total
Civil Works		2.8		2.8
GEF		(0.1)		(0.1)
IDA		(2.5)		(2.5)
Vehicles	2.2		0.1	2.3
GEF	(1.0)		(0.1)	(1.0)
IDA	(1.0)			(1.0)
Equipment			3.6	3.6
GEF			(1.9)	(1.9)
IDA			(1.4)	(1.4)
Training			3.4	3.4
GEF			(1.4)	(1.4)
IDA			(1.6)	(1.6)
Consultants			3.7	3.7
GEF			(2.2)	(2.2)
IDA			(1.2)	(1.2)
Operating Costs			11.1	11.1
GEF			(4.9)	(4.9)
IDA			(5.1)	(5.1)
Totals	2.2	2.8	21.9	26.9
GEF	(1.0)	(0.1)	(10.4)	(11.5)
IDA	(1.0)	(2.5)	(9.3)	(12.8)

Notes: the difference between the total project costs in each category and the GEF and IDA provisions (in parentheses) would be financed by the Government.

Tanzania
Lake Victoria Environmental Management Project
Summary of Proposed Procurement Arrangements
(US\$ million)

Item	ICB	NCB	Other	Total
Civil Works		1.9		1.9
GEF		(0.1)		(0.1)
IDA		(1.6)		(1.6)
Vehicles	1.9		0.1	1.9
GEF	(0.8)		(0.1)	(0.8)
IDA	(0.9)			(0.9)
Equipment			2.8	2.8
GEF			(1.5)	(1.5)
IDA			(1.0)	(1.0)
Training			3.4	3.4
GEF			(1.6)	(1.6)
IDA			(1.4)	(1.4)
Consultants			3.7	3.7
GEF			(2.3)	(2.3)
IDA			(1.0)	(1.0)
Operating Costs			8.9	8.9
GEF			(4.0)	(4.0)
IDA			(4.1)	(4.0)
Totals	1.9	1.9	18.8	22.6
GEF	(0.8)	(0.1)	(9.4)	(10.3)
IDA	(0.9)	(1.6)	(7.6)	(10.1)

Notes: the difference between the total project costs in each category and the GEF and IDA provisions (in parentheses) would be financed by the Government.

Uganda
Lake Victoria Environmental Management Project
Summary of Proposed Procurement Arrangements
(US\$ million)

Item	ICB	NCB	Other	Total
Civil Works		2.2		2.2
GEF		(0.3)		(0.3)
IDA		(1.8)		(1.8)
Vehicles	2.5			2.5
GEF	(1.1)			(1.1)
IDA	(1.1)			(1.1)
Equipment			3.3	3.3
GEF			(1.7)	(1.7)
IDA			(1.3)	(1.3)
Training			3.2	3.2
GEF			(1.3)	(1.3)
IDA			(1.6)	(1.6)
Consultants			5.2	5.2
GEF			(3.5)	(3.5)
IDA			(1.2)	(1.2)
Operating Costs			11.7	11.7
GEF			(5.3)	(5.3)
IDA			(5.1)	(5.1)
Totals	2.5	2.2	23.4	28.1
GEF	(1.1)	(0.3)	(11.8)	(13.2)
IDA	(1.1)	(1.8)	(9.2)	(12.1)

Notes: the difference between the total project costs in each category and the GEF and IDA provisions (in parentheses) would be financed by the Government.

Annex 3

KENYA, TANZANIA, AND UGANDA

LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT

PROJECT IMPLEMENTATION PLAN

A. Introduction

1. This summarizes the Project Implementation Plan (PIP), which is a joint product of the Lake Victoria Environmental Management Secretariats (LVEMPS) of Kenya, Tanzania and Uganda and IDA/GEF officials responsible for the Lake Victoria Environmental Management Project (LVEMP).

B. Overall Responsibility

2. **LVEMPS:** Overall responsibility for coordinating project implementation will rest with the LVEMP Secretariats (LVEMPS), created under the Tripartite Agreement signed by the Governments of Kenya, Tanzania and Uganda on August 5, 1994. Under the Agreement the three governments undertook to establish a Regional Policy Steering Committee (RPSC) to be assisted by a Regional Secretariat and two National Secretariats. The Regional Secretariat is located in Tanzania. Under the project the LVEMPS's will: a) provide a secretariat to the LVEMP; b) ensure efficient implementation of the LVEMP by establishing a monitoring and coordinating mechanism; c) assist in building institutional and human resource capacity within the program; d) organize donor coordination; e) assist in formulating harmonised policies, institutions and a legal framework relevant to Lake Victoria; f) establish necessary linkages between the LVEMP and the Lake Victoria Fisheries Organisation (LVFO); g) provide logistical support to the sectoral ministries and agencies for implementation of the program; h) ensure compliance with IDA and GEF reporting, procurement and disbursement procedure ; and i) provide policy guidance and a forum for conflict resolution. In addition the Regional Secretariat through the RPSC will monitor and review progress of implementation, report on progress every quarter, and provide guidance and direction to the LVEMP.

3. The Regional Secretariat in Tanzania will assist the RPSC, and provide linkages with other regional agencies dealing with issues pertaining to Lake Victoria. This Secretariat, working under the office of the Vice President in the Department of Environment, Poverty Alleviation and Union Matters, will report to the RPSC. The Regional Secretariat will also perform the function of the National Secretariat for LVEMP implementation in Tanzania.

4. In Kenya the LVEMP Secretariat will work under the Ministry of Environment and Natural Resources, while in Uganda it will be under the Ministry of Natural Resources.

5. The Regional Policy and Steering Committee, headed by a chairperson who will be elected by that committee from among its membership at its first meeting and thereafter on an annual rotation, will include a maximum of three representatives of each country led by an officer at Permanent Secretary level. The Executive Secretary, to be appointed by the RPSC, at its first meeting, will as head of the Regional Secretariat be responsible for monitoring progress, preparing review meetings, and compiling reports as required by IDA and GEF. The National Secretariat in each country will assist the Executive Secretary of the Regional Secretariat in preparing regional meetings and regional level reports. The locations of National Secretariats in each country will be determined by the respective Governments.

6. The Regional Secretariat in Tanzania and the National Secretariats in Kenya and Uganda will each be headed by a full-time professional (equivalent in qualifications and experience to a Deputy Principal/Permanent Secretary) who will be accountable to the Principal/Permanent Secretary of their parent Ministry and will have full responsibility for coordinating LVEMP activities. Each LVEMP Secretariat will be staffed with: (a) one Project Accountant; (b) one Procurement/Disbursement Officer (PDO); (c) one Operations Officer (OPO); (d) one Management Information Systems Officer (MISO); one secretary, two drivers and one messenger. The major responsibility of the PDO will be to ensure that all Ministries, agencies, and institutions using Project funds set up proper accounting systems and maintain proper accounts, and promptly claim reimbursement from GEF and IDA. All withdrawal applications will be submitted to IDA/GEF through the office of the PDO so that a proper track of expenditures on different components of the Program in other institutions and ministries or departments is kept, and IDA/GEF disbursements are received by the beneficiaries without undue delay. The PDO will also be responsible for supervising the Project's "Special Account" and guiding various implementing agencies with regard to procedures for its use. The major responsibility of the OPO will be to supervise closely the implementation of various Project components, identify implementation bottlenecks in the field and/or at Headquarters, and bring these bottlenecks to the attention of the head of the Regional/National Secretariat. The OPO will also coordinate training and provide the MISO with reports on physical and financial progress. The latter will establish and operate an approved management information system installed by consultants, obtain periodical reports from various managers concerned with project implementation, collate data and reports and submit them to the head of the LVEMP Secretariat. The MISO will collect data on key monitorable indicators and prepare quarterly and annual reports to be submitted to IDA/GEF in agreed formats, as well as background and progress reports for IDA/GEF review missions.

7. LVEMP secretariat staff will be recruited on personnel service contracts. Their salaries and wages for the duration of the project will be financed by the GEF, together with expenditures on vehicles and equipment required for LVEMP to ensure rapid build up of its implementation capacity.

C. Specific Responsibilities of the Secretariats for LVEMP

8. The LVEMP Regional Secretariat's specific responsibilities will include, but not be limited to: (a) organisation of semi annual meetings of RPSC members for obtaining

their guidance and direction on implementation of the LVEMP including review and monitoring of the Program; (b) creating implementation mechanisms to ensure formulation of harmonised policies institutions and legal framework relevant to Lake Victoria; (c) establishing close working linkages with the LVFO and reporting on its progress to the RPSC; (d) upon direction of the RPSC establishing functional links with the Permanent Tripartite Commission (PTC) and other regional organisations such as the Kagera Basin Organization (KBO), the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), and the Technical Cooperation for the Promotion of Development and Environmental Protection of the Nile Basin (TECCONILE); (e) environmental management capacity building in the public, private and non governmental sectors; (f) monitoring and coordination to ensure effective implementation, from the regional to national to grassroot level, of all LVEMP components, including research, extension, training, evaluation and transfer of technological skills; (g) assisting IDA supervision missions with necessary information, setting up meetings, organising field visits and accompanying the supervision mission to meetings and field visits; (h) submitting quarterly progress reports to IDA/GEF in agreed formats in addition to such other periodic reports which IDA/GEF may specifically request; (i) developing a detailed Operational Manual for LVEMP in the first Project year (PY-1), and an Operational Plan to ensure sustainability after the closing date, both in a format satisfactory to IDA; (j) conducting with IDA/GEF a Mid-Term Review of Project progress by the end of February 1999; and (k) preparing an Implementation Completion Report (ICR) within six months from the close of the Project.

9. The LVEMP National Secretariats' specific responsibilities will include, but not be limited to: (a) organisation of Technical Committee meetings (at least three per year), of members drawn from all implementing agencies for reviewing progress on implementation of LVEMP; (b) creating implementation mechanisms to ensure formulation of harmonised policies, institutions and legal framework relevant to Lake Victoria in close cooperation with the Regional Secretariat; (c) effective participation in meetings and workshops convened by implementing agencies for furtherance of the program; (d) capacity building in environmental management of the lake and its catchment, in public, private and non-governmental sectors; (e) monitoring and coordination at the national and grassroot level, of all LVEMP components, including research, extension, training, evaluation and transfer of technological skills and providing feed back to their respective Ministries of Environment and Natural Resources; (f) assisting IDA supervision missions with necessary information, setting up meetings, organising field visits and accompanying the supervision missions to meetings and field visits; (g) submitting quarterly progress reports to IDA/GEF in agreed formats in addition to such other periodic reports as IDA/GEF may specifically request; (h) developing a detailed Operational Manual for LVEMP implementation in their respective countries during the first Project year (PY-1), and an Operational Plan to guarantee sustainability after the closing date, both in a format satisfactory to IDA; (i) conducting with IDA/GEF a Mid-Term Review of Project progress by the end of February 1999; and (j) preparing an Implementation Completion Report (ICR) within six month from the close of the Project. The three Governments have assured IDA/GEF that they will provide adequate and timely budgetary and staffing support to the implementing ministries, institutions and agencies to undertake these responsibilities.

10. The LVEMP secretariats will set up the following institutional and regulatory mechanisms to secure inter-agency coordination, obtain periodic feedback, submit regular progress reports to IDA/GEF in agreed formats, and thereby implement the Lake Victoria Environmental Management Program:

(a) Project Implementation Committee (PIC): In each country the LVEMPS will set up a Project Implementation Committee (PIC) with membership drawn from all implementing agencies. The OPO of the LVEMP National Secretariat will be nominated as Secretary of the PIC. Members will include representatives from the Ministries/Departments of Environment and Natural Resources, Fisheries, Water, and Agriculture, along with members of specialised technical agencies/institutions participating in the program, private sector and non governmental organisations. The PIC will meet every month under the Chairmanship of the Head of the LVEMP National Secretariat. The agenda of PIC meetings will include review of the physical and financial progress of the various project components including programs in littoral pilot zones, in wetlands as well as in rivers within the Lake Victoria Catchment, community participation, publication and dissemination of information, progress in procurement, construction of works and installation of equipment. To this end, the LVEMPS will define for each of the implementing agencies the formats and the timing for submission of the quarterly progress reports.

(b) Meetings with Regional Sub-Program Resource Personnel : In order to maintain close grass root contacts and stay current with the problems of each region/ subcomponent, and to assist the newly set-up pilot zone administrations, LVEMPS will convene meetings each quarter at selected places in the country, each in a cluster of mostly contiguous regions. These meetings will be used to review, on a regional basis, the problems encountered and progress made in the implementation of various components of LVEMP, and to agree on the next steps and a work plan for the pilot projects under implementation, including programs implemented lake wide. Project-specific protocols for start up will be drawn up after rapid appraisal and establishment of bench mark status. Representatives of the concerned research institutions, government extension departments, stakeholders and community based organisations, and the faculty of national universities will participate in these meetings.

(c) Community Involvement in the Program : Community participation is considered key to the successful implementation of the program. This will imply involvement and participation of stakeholders including empowerment of communities for eventual ownership of the programs targeted for their benefit. In keeping with this overall objective the LVEMPS will ensure that the processes of education, communication, awareness creation, community participation and motivation are followed consistently and thoroughly throughout the implementation phase of the program, and that seminars, workshops and demonstrations are conducted in a timely and organised manner. A systematic community education program will need to be launched, to teach rural communities not only in formal class settings but through radio or video programs the benefits of environmental conservation and management. The LVEMPS will oversee these efforts by assisting in the preparation of workshops and seminars, reviewing comprehensively the achievements of each of these events,

identifying success and failure, and preparing in consultation with and cooperation of all participating agencies, workplans for implementation during the following year and assigning responsibilities for future specific actions. LVEMPS in their regular meetings will review the progress in the implementation of recommended activities, and include the results of such review in quarterly progress reports to their respective Ministry, IDA and GEF.

(d) Workshops on Procurement, Disbursements and Project Management : The LVEMPS will organize, with IDA/GEF assistance, a workshop on procurement, disbursement and project management in Project Year 1 (and in subsequent years if necessary) for selected staff engaged in LVEMP implementation procurement, disbursement and project management. The concerned staff will also receive intensive training in IDA/GEF procedures.

(e) Mid-Term Review (MTR): The LVEMPS will collaborate with IDA in a Mid-Term Review (MTR) of LVEMP, which will be held by the end of March, 1999. The LVEMPS will enlist the participation of all implementing agencies. The MTR will include a review of progress in policy reform, including harmonised legislation, legal framework and institutional arrangements for regional cooperation. It will also review progress achieved in staffing, funding and operational activities, and capacity building. As part of the Mid-Term Review, the three governments will prepare an updated analysis of transboundary environmental concerns, to guide the second phase of project implementation, and set the stage for subsequent initiatives. Based on the findings of the Mid-Term Review, the Project will be restructured, if and when necessary.

(f) Project Reporting, Monitoring and Evaluation: The LVEMPS will be responsible for coordinating the development of annual work plans for various Project components and maintaining data on implementation progress. To this end the LVEMPS will:

(i) establish bench marks for evaluation of subsequent project achievements in consultation with implementing agencies;

(ii) prepare quarterly progress reports, providing a descriptive and analytical account of project achievements and highlighting implementation problems; these reports will be submitted regularly to the respective Ministries of Environment and Natural Resources and IDA for the quarters ending March, June, September and December of each year. The comments and directives of the Ministries, if any, on the quarterly reports will also be communicated to IDA;

(iii) prepare and submit to IDA an Implementation Completion Report (ICR) within six months from project closing date. IDA will provide the LVEMPS with a standard format for the ICR. The ICR will, *inter alia*, include the Government's assessment of the extent to which objectives were realized, details of physical and financial achievements, problems encountered, solutions found and lessons learned. The ICR will include a revised GEF Strategic Action Program, containing an outline of interventions needed to address priority

problems. IDA will use this as the basis for convening a donors' meeting to seek commitments to support such interventions.

(g) **Audit:** The LVEMPS will ensure that separate books of account are maintained in LVEMPS and by each implementing agency for all project-related accounts. These accounts, together with special accounts and statements of expenditure, will be audited on an annual basis, by independent auditors satisfactory to IDA, and audit reports will be submitted to IDA within six months from the end of each fiscal year.

(h) **Quality Control :** LVEMPS will organize periodical evaluations and technical reviews of the program's implementation. The LVEMPS will also coordinate arrangements for the **Panel of Scientists**, whose 7 members will serve as an overall advisory group for the scientific studies of the lake. They will meet once a year to review issues arising from project implementation, and will meet at other times as required, as well as being available individually, at the request of the Regional Policy and Steering Committee, to provide advice about specific issues. The LVEMPS will ensure that the advice and comments tendered by the **Panel** are addressed by the implementing agencies.

11. The performance of the Lake Victoria Fisheries Organisation (LVFO), which will have a critical role in ensuring the quality of implementation of several important components of the program, will also be reviewed by IDA/GEF supervision missions. The LVFO will furnish quarterly progress reports to the Ministries of Environment and Natural Resources, in a format to be agreed during Project implementation; these reports will, on request, be available to IDA. At the Mid-Term Review, the performance and future needs/sustainability of the LVFO will also be reviewed.

D. Focal Points For Implementation of LVEMP

12. Focal points for implementation of LVEMP will be as follows: (a) at the Regional level, the RPSC with the assistance of the Regional Secretariat will be responsible for the overall direction, planning, monitoring and assessment of the program; (b) at the National level, the LVEMP National Secretariats, assisted by the sectoral ministries/departments, identified universities and/or research institutions will be responsible for the overall direction, planning, monitoring and assessment of the respective national program; (c) at the Zonal level the office of the Regional Commissioner, the Zonal Officer with the assistance of selected Extension Staff; and Local Agencies; (d) at the Community /Village Level, Non Governmental Organizations and Community Based Organizations, selected community leaders, groups of fisherfolk, farmers and Extension Agents.

13. Major components of the program will be implemented by various national agencies as follows: (a) the three Fisheries Research Institutes (KEMFRI, TAFIRI and FIRI) will play lead roles in all sub-components of fisheries research, and will collaborate with the Fisheries Departments of their respective governments in the fisheries extension, and with the Ministries of Water in the Water Quality components; (b) the Ministries of Water will be the lead agencies for the Water Quality components, and they will in turn collaborate closely with the Ministries of Environment, Natural

Resources and Agriculture in their implementation of the components on land use and wetland management (c) National Wetlands Committees in all three countries will also be involved in these components, with continuing assistance from the World Conservation Union (IUCN); (d) the Moi, Makerere, and Sokoine Universities, and the Universities of Nairobi and Dar es Salaam, will be involved in many of the studies, including those on socio-economics; (e) the water testing laboratories of the Kisumu and Mwanza Municipal Councils, the Uganda Water and Sewage Corporation, and the Lake Basin Development Authority (in Kisumu) will extend the reach of laboratories already operating or planned by the respective Ministries of Water; (e) National Steering Committees or task forces will be set up for the Water Hyacinth Control Program, while the respective national agricultural research institutes will establish and operate the rearing units for biological control agents.

E. Capacity Building

14. The LVEMPS will coordinate the capacity building programs under the program and take the overall responsibility for **Training**. Each implementing department and agency will prepare an annual training plan and submit it to the respective LVEMP National Secretariat. The training plan will identify the subjects and courses for training, their timing, duration, estimated costs, name and location of the training institutions, the names of the persons proposed, and the justification for their training. The training plans will be submitted to IDA for approval, the first within three months of Credit Effectiveness, and subsequent annual plans by May 15 of each year.

15. Every sub-program makes extensive provision for capacity building. The training program will include regional fellowships (including about 100 Masters Degrees and 15 PhDs), study tours, on-site training to the national regional and field staff, selected community leaders, fisherfolk/farmers and entrepreneurs. At least 2,000 short-term and on-job training opportunities are provided in the project, and at least 600 stakeholder workshops.

F. Implementation Plan, Key Monitorable Indicators and Supervision Plan

16. The outline of key Monitorable Indicators, as agreed during negotiations, is in Annex 4, the schedule of procurement activities arising out of the Project Implementation Plan (PIP) is in Annex 5, and the agreed Supervision Plan is shown in Annex 6.

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Annex 4

LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT PROJECT PERFORMANCE AND IMPACT INDICATORS

The project is designed to be a mixture of information-gathering, capacity-building, institution establishment, and actions to begin to deal with the environmental problems of the lake and its catchment, with an emphasis on fisheries management, water hyacinth control, improving water quality, and land use management (including wetlands). A central concern is to reduce the flow of nutrients and pollutants into the lake, and reverse some of the adverse environmental developments of the past. This project will attempt to lay the foundations in these areas, and provide a "central core" around which will coalesce a larger program of investments to clean up the lake, and establish sustainable development of the lake and its catchment in the face of the growing population pressures likely to be experienced.

Project Implementation: success will be measured by (a) building capacity within the riparian universities, the line ministries, the LVEMP secretariats and the riparian communities for environmental analysis, conservation and adoption of cohesive management practices on the lake; (b) harmonizing among the three countries legislation addressing management of fisheries and environmental variables important in the lake basin, and improved enforcement of this legislation; (c) establishment of the Lake Victoria Fisheries Organization (LVFO); (d) completion of gazetting and regulating fish landing sites within the pilot zone areas and enforcing acceptable fishing practices within a 5 km radius of fishing villages within these areas, with full participation of lake shore fishing communities; (e) establishing sustainable long-term capacity for management and control of water hyacinth and other invasive weeds in the Lake Victoria Basin, through integrated weed control methods and community involvement; (f) establishing a lake wide water quality and rainfall monitoring system with agreed parameters to generate information on eutrophication management and pollution control; and (g) completing a full inventory and resource survey of Lake Victoria wetlands, and preparing investment proposals for the economic management of these wetlands, including their rehabilitation.

Project Impact: success will be measured by: (a) reductions in the nutrient and fecal coliform counts from towns bordering the lake; (b) reductions in sediment and phosphorus loading in rivers flowing into the lake; (c) reductions by at least 50 percent over five years in significant industrial pollutants entering the lake; (d) stabilizing the Nile perch catch at least at current levels, and increasing the recovery of other species; (e) measurable reduction in the infestation of water hyacinth; and (f) stabilization of areas retained as wetlands.

LVEMP: Procurement Packages and Implementation Schedule

KENYA

		Fiscal Years																			
ACTIVITIES	P.M.*	1997				1998				1999				2000				2001			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Works																					
1.1 Construction of fish ponds	NCB			1	23	4	56	7	8	9											
1.2 Construction of fish hatcheries	NCB				23	4	56	7	8	9											
1.3 Renovating offices and weevil rearing rooms	NCB			1	23	4	567	8		9											
1.4 Weirs	NCB			1	23	4	56	7	8		9										
1.5 Construction of Artificial Wetlands	NCB			1	23	4	56	7	8		9										
1.6 Littoral monitoring and rain gauge stations	NCB			1	23	4	56	7	8		9										
1.7 Micro Projects	NCB					1	23	4	56	7	8										9
1.8 Kisumu Sewage Treatment Plant	ICB							1	23	4	5	6	7	8							9

<p>PROCUREMENT ACTIONS</p> <p>1 Prepare bidding documents 2 Submission of draft BID to IDA 3 Clearance by IDA 4 Bidding period</p>	<p>5 Bid evaluation 6 IDA no objection for award 7 Contract award 8 Construction 9 Construction complete</p>	<p>METHOD OF PROCUREMENT</p> <p>ICB-International Competitive Bidding NCB-Local Competitive Bidding ISP/NSP-International/National Shopping Procedures</p> <p>* Procurement Method</p>
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LVEMP: Procurement Packages and Implementation Schedule

KENYA

		Fiscal Years																					
ACTIVITIES	P.M.*	1997				1998				1999				2000				2001					
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
2. Vehicles																							
2.1 Cars, 4-Wheel Drive Vehicles, Motorcycles	ICB			1	23	4	56	7	8														
2.2 Bicycles, Boats, Canoes, Dinghies and Engines	NCB			1	23	4	56	7	8														
3. Goods																							
3.1 Laboratory Equipment	ISP			1	23	4	56		7			8											9
3.2 Office Equipment and Computers	ISP			1	23	4	56	7	89														
3.3 Field Equipment	ISP			1	234	5	789																

PROCUREMENT ACTIONS 1 Prepare bidding documents 2 Submission of draft BID to IDA 3 Clearance by IDA 4 Bidding period	5 Bid evaluation 6 IDA no objection for award 7 Contract award 8 Delivery 9 Installation	METHOD OF PROCUREMENT ICB-International Competitive Bidding NCB-Local Competitive Bidding ISP/NSP-International/National Shopping Procedures * Procurement Method
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LVEMP: Procurement Packages and Implementation Schedule

TANZANIA

Fiscal Years

ACTIVITIES	P.M.*	1997				1998				1999				2000				2001					
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
2. Vehicles																							
2.1 Cars, 4-Wheel Drive Vehicles, Motorcycles	ICB			1	23	4	56	7	8														
2.2 Bicycles, Boats, Canoes, Dinghies and Engines	NCB			1	23	4	56	7	8														
3. Goods																							
3.1 Laboratory Equipment	ISP			1	23	4	56		7			8		9									
3.2 Office Equipment and Computers	ISP			1	23	4	56	7	89														
3.3 Field Equipment	ISP			1	234	5	789																

PROCUREMENT ACTIONS

- 1 Prepare bidding documents
- 2 Submission of draft BID to IDA
- 3 Clearance by IDA
- 4 Bidding period

- 5 Bid evaluation
- 6 IDA no objection for award
- 7 Contract award
- 8 Delivery
- 9 Installation

METHOD OF PROCUREMENT

- ICB-International Competitive Bidding
- NCB-Local Competitive Bidding
- ISP/NSP-International/National Shopping Procedures

* Procurement Method

LVEMP: Procurement Packages and Implementation Schedule

UGANDA

Fiscal Years

ACTIVITIES	P.M.*	1997				1998				1999				2000				2001				
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
2. Vehicles																						
2.1 Cars, 4-Wheel Drive vehicles, Motorcycles	ICB			1	23	4	56	7	8													
2.2 Bicycles, Boats, Canoes, Dinghies and Engines	NCB			1	23	4	56	7	8													
3. Goods																						
3.1 Laboratory Equipment	ISP			1	23	4	56	7		8		9										
3.2 Office Equipment and Computers	ISP			1	23	4	56	7	89													
3.3 Field Equipment	ISP			1	234	56	789															

PROCUREMENT ACTIONS		METHOD OF PROCUREMENT
1 Prepare bidding documents	5 Bid evaluation	ICB-International Competitive Bidding
2 Submission of draft BID to IDA	6 IDA no objection for award	NCB-Local Competitive Bidding
3 Clearance by IDA	7 Contract award	ISP/NSP-International/National Shopping Procedures
4 Bidding period	8 Delivery	
	9 Installation	* Procurement Method

ANNEX 6

LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT

Supervision Plan¹

Timing	Staff Weeks	Staffing	Duration (weeks)
FY1997	35	Bank resources of which:	
		-- Task manager	10
		-- Procurement Specialist	5
		-- Operations Management Specialist	5
		-- Fisheries Biologist	4
		-- Limnology/Water Quality Specialist	4
		-- Sociologist/Socio-economist	4
		-- Water Hyacinth Control Specialist	3
FY1998	30	Bank resources of which:	
		-- Task manager	10
		-- Operations Management Specialist	5
		-- Fisheries Biologist	4
		-- Limnology/Water Quality Specialist	4
		-- Sociologist/socio-economist	4
		-- Water Hyacinth Control Specialist	3
FY1999	40	Bank resources (mid term Review) of which:	
		-- Task manager	10
		-- Procurement Specialist	3
		-- Sanitation Engineer	4
		-- Operations Management Specialist	5
		-- Fisheries Biologist	4
		-- Limnology/Water Quality Specialist	4
		-- Socio-economist	4
		-- Water Hyacinth Management Specialist	3
		-- Soil Management Specialist	3
FY2000	25	Bank resources of which:	
		-- Task manager	8
		-- Operations Management Specialist	3
		-- Sanitation Engineer	3
		-- Fisheries Biologist	4
		-- Limnology/Water Quality Specialist	4
		-- Socio- economist	3
FY2001	20	Bank resources of which:	
		-- Task manager	8
		-- Operations Management Specialist	3
		-- Fisheries Biologist	3
		-- Limnology/Water Quality Specialist	3
		-- Socio-economist	3

¹ Disbursements are scheduled to FY 2002. Some of the required expertise may be provided by other agencies involved in project supervision.

Annex 7

LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT

GEF INCREMENTAL COSTS

Lake Victoria is a “commons” of water, biota, nutrients, pollutants, and the human activities which use the resources of the lake and its catchments, and impact upon them. In matters such as fishing, the addition of nutrients to the lake, pollution of the lake and its tributaries, the economic characteristics of behavior in a “commons” apply - in particular, the incentives perceived by the individuals, and individual countries involved, all are conducive to actions which may be in the best, short-term interests of the individuals concerned, but not in the best interests of the whole group of countries, nor the global community.

The project will be the first regional program to address the major environmental threats to the Lake Victoria ecosystem, all of which are transboundary in character. The project will develop the information, capacity and institutions needed for collective action, and test, through a number of targetted pilot actions and investments, the feasibility and initial impact of some of the priority regional initiatives needed to stabilize the lake ecosystem. Each project component involves significant transaction and regional capacity-building costs first to establish cooperative agreements, and second to implement priority elements of them on a trial basis. These costs are clearly incremental in that they are not in the national baselines, would not be incurred without the project, and address transboundary environmental issues.

The project will lay the foundations - of knowledge, capacity, and cooperative institutional frameworks - for a long-term program of investments in the lake and its catchments, which will rehabilitate and stabilise the ecosystem. In particular, these will be investments in cleaning up the waste discharges from polluting industries, rehabilitating and expanding water supply and sanitation systems, reduction of soil erosion, and sustainable management of fisheries and wetlands. There will be substantial investments in these even within the five years of LVEMP implementation, guided by the conceptualization which has already taken place, and the findings of the LVEMP during implementation. Success in the current project will lay the foundations for longer term national benefits for the three countries concerned. For example, if the long-standing barriers to regional fisheries cooperation can be overcome, the design and implementation of a regional fisheries management program will eventually contribute to a more sustainable fish catch, as well as conservation of the lake's aquatic biodiversity. Installation of improved sanitation and water treatment facilities will have benefits for the health of local and national populations.

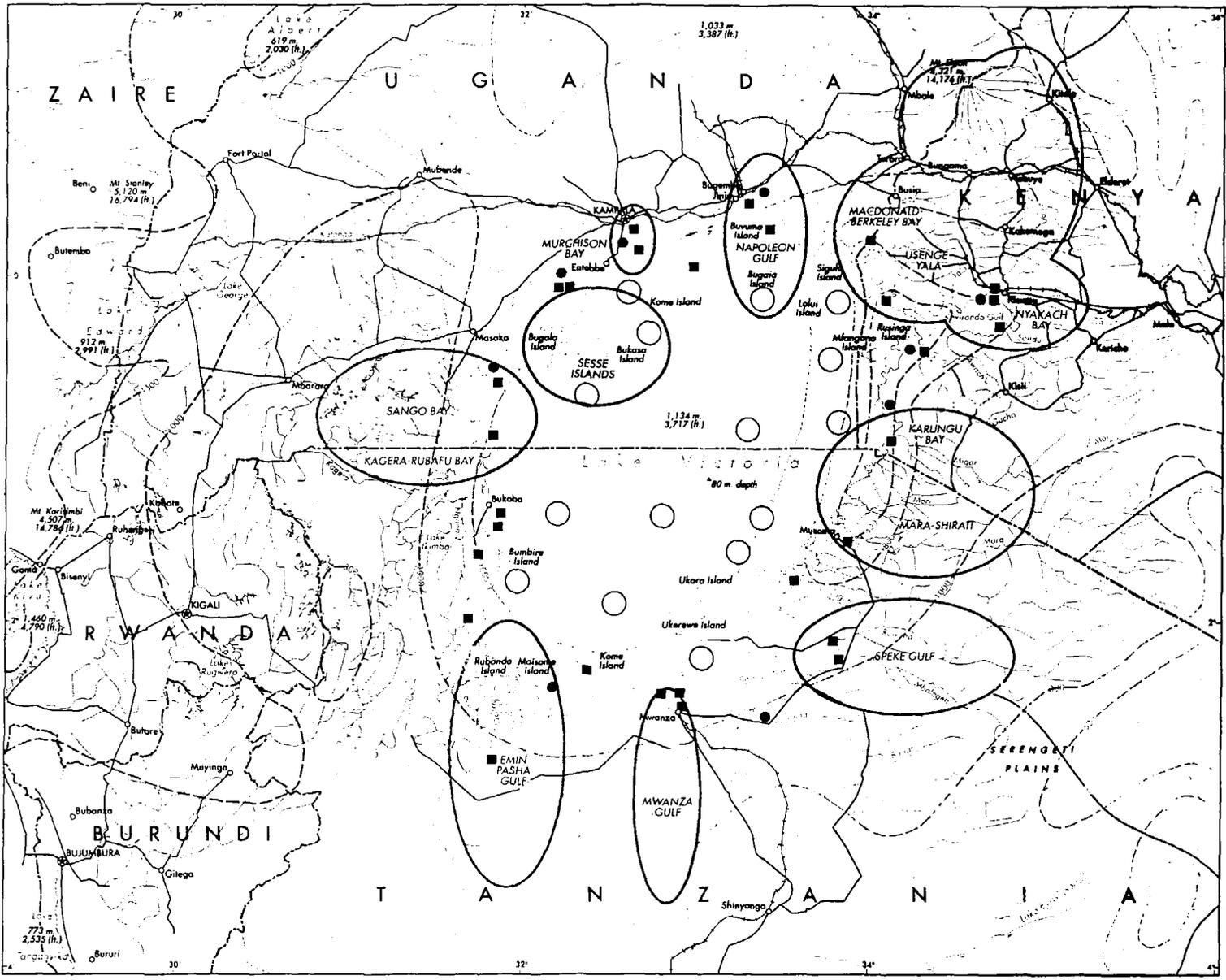
There are, however, significant transaction costs which act as barriers to achieving these benefits, as demonstrated by the lack of progress to date. Examples of the barriers are the lack of institutional capacity, information and scientific understanding. The costs of overcoming these barriers are therefore truly incremental. So too are the costs of actions to achieve additional global benefits, such as aquaculture in support of endangered species, and conservation of critical habitats. Incremental costs of the project are estimated to be US\$38.8 million (details in following table). In addition to financing the baseline and adjusted baseline measures from non-GEF (IDA) sources, the three riparian governments have agreed to contribute US\$3.8 million from their own resources to finance a part of the project's incremental cost. They have requested a GEF grant of US\$35 million to fund the balance.

Incremental Cost Matrix

Component	Cost	Cost	Domestic Benefit	Global Environmental Benefit
Fish Biology/Biodiversity Conservation	Baseline	0	None	
	Alternative	6.58		Improved knowledge of aquatic populations and threats to their survival, with education and design of measures to strengthen conservation planning and advance understanding of evolution
	<i>Increment</i>	6.58		
Aquaculture	Baseline	1.55	Possible longer term economic gains from increased food production and trade in ornamental fish	
	Alternative	3.10		Restoration of endangered species through development of sustainable uses, and avoiding unforeseen effects of exotic introductions
	<i>Increment</i>	1.55		
Socio-Economic Studies	Baseline	2.00	Improved management of aquatic resources to increase community benefits	
	Alternative	2.67		Portion of socio-economic studies devoted to understanding how to sustain complex ecosystems while alleviating poverty
	<i>Increment</i>	0.67		
Establishing Database	Baseline	0	None	
	Alternative	0.98		Shared database facilitating regional collaboration
	<i>Increment</i>	0.98		
Fisheries Extension, Policies and Laws	Baseline	14.09	Gains from better fishing techniques, reduced post-harvest losses, higher quality products	
	Alternative	14.09		Rescue and preservation of endangered species through closed fishing areas, harmonisation of laws and regulations, and better enforcement
	<i>Increment</i>	0		
Water Hyacinth Control	Baseline	3.32	Reduced damage to infrastructure and improved human health	
	Alternative	8.30		More effective, widespread, environmentally friendly biological control methods enabled by regional collaboration
	<i>Increment</i>	4.98		
Water Quality Monitoring	Baseline	0	No additional investment justified in the absence of a regional framework	
	Alternative	9.58		Improved environment for endangered species, catalyzing regional collaboration in important international waters, and increased understanding of lake/catchment management to sustain resources of global importance
	<i>Increment</i>	9.58		

Incremental Cost Matrix

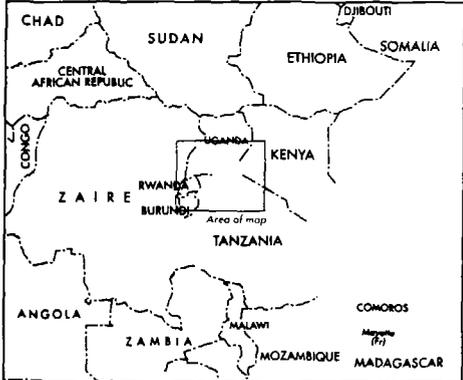
Component	Cost Category	Cost (US\$m)	Domestic Benefit	Global Environmental Benefit
Industrial/Municipal Waste Management	Baseline	9.89	Identifying priority areas and methods for investments in waste treatment	
	Alternative	9.89		Increased knowledge of environmentally friendly biological methods for managing toxic waste through use of artificial wetlands for tertiary treatment of municipal and industrial waste
	<i>Increment</i>	0		
Land Use/Wetlands Management	Baseline	5.84	Identifying and managing agro-chemical hazards, reducing soil loss through investments in afforestation and soil conservation	
	Alternative	14.07		Conservation of biodiversity in critical habitats through sustainable management of wetlands, and facilitating regional collaboration in understanding catchment/lake interactions
	<i>Increment</i>	8.23		
Lake Victoria Fisheries Organisation	Baseline	0	None	
	Alternative	2.28		International management mechanism to harmonise environmental laws/regulations, and allow international collaboration in management of common pool resources
	<i>Increment</i>	2.28		
LVEMP Secretariats	Baseline	0	None	
	Alternative	2.75		Coordination in capacity building for regional initiatives
	<i>Increment</i>	2.75		
Support to Riparian Universities	Baseline	0	None	
	Alternative	1.06		Increased scientific capacity for sustainable conservation of biodiversity
	<i>Increment</i>	1.06		
Fisheries Levy Trust	Baseline	2.06	Sustaining fisheries management by providing sources of funds for coordination, research, extension, monitoring and enforcement	
	Alternative	2.06		Increased fiscal capacity for sustainable conservation of biodiversity
	<i>Increment</i>	0		
Pollution Disaster Management	Baseline	0	None	
	Alternative	0.17		Protecting integrity of international biological resources of immense value
	<i>Increment</i>	0.17		
TOTALS	Baseline	38.75		
	Alternative	77.58		
	<i>Increment</i>	38.83		



EAST AFRICA LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT

- DRAINAGE BASIN BOUNDARY
 - LITTORAL SAMPLING SITES
 - RAINFALL GAUGES
 - OPEN WATER SAMPLING SITES
 - LAKE SIDE AND CATCHMENT PILOT ZONES
 - - - ISOHYETS (MEAN ANNUAL RAINFALL, mm)
 - - - PARK/RESERVE BOUNDARIES
 - ELEVATIONS IN FEET:
 - <5,000
 - 5,000-4,000
 - 6,000-7,000
 - >7,000
 - RIVERS (WITHIN DRAINAGE BASIN BOUNDARY)
 - SWAMPS
 - SELECTED CITIES AND TOWNS
 - NATIONAL CAPITALS
 - MAIN ROADS
 - RAILROADS
 - - - INTERNATIONAL BOUNDARIES
- 0 50 100 150 KILOMETERS

The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.







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