

**The Inspection Panel  
Investigation Report**

**Kenya: Lake Victoria Environmental  
Management Project ( IDA Credit. 2907-  
KE and GEF TF 23819)**

**December 15, 2000**

**INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT  
INTERNATIONAL DEVELOPMENT ASSOCIATION**

**THE INSPECTION PANEL**

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**IPN REQUEST RQ99/6**

December 15, 2000

**MEMORANDUM TO THE EXECUTIVE DIRECTORS AND ALTERNATES**

**SUBJECT:** The Inspection Panel Investigation Report  
KENYA: Lake Victoria Environmental Management Project  
(IDA Credit No. 2907-KE) (GEF TF 23819)

Pursuant to paragraph 22 of the IBRD Resolution 93-10 and IDA Resolution 93-6 establishing the Inspection Panel, and paragraph 53 of the Panel's *Operating Procedures*, and in accordance with the terms of the decision of the Board of Executive Directors dated March 20, 2000 that authorized the investigation, please find attached the above-referenced Report.

The Report concludes that Management is in compliance with OD 4.01 (Environmental Assessment) with respect to categorization of the Project, OD 4.15 (Poverty Alleviation) and OP 10.04 (Economic Evaluation of Investment Operations). It further concludes that Management is not in full compliance with OD 4.01 with respect to meeting the overall purpose and nature of the OD including, as acknowledged by Management, adequate consultations with affected groups and NGOs. Nor is it in compliance with paragraph 42 of OD 13.05 on Bank Supervision.

Please be advised that a copy of the Report has today been delivered to the President of IDA, and that according to paragraph 23 of the Resolution establishing the Panel "within six weeks from receiving the Panel's findings, Management will submit to the Executive Directors for their consideration a report indicating its recommendations in response to such findings."

It is our fervent hope that our Report and findings will be of value to the Bank

Attachment.

## About the Panel

The Inspection Panel was created in September 1993 by the Board of Executive Directors of the World Bank to serve as an independent mechanism to ensure accountability in Bank operations with respect to its policies and procedures. The Inspection Panel is an instrument for groups of two or more private citizens who believe that they or their interests have been or could be harmed by Bank-financed activities to present their concerns through a Request for Inspection. In short, the Panel provides a link between the Bank and the people who are likely to be affected by the projects it finances.

Members of the Panel are selected “on the basis of their ability to deal thoroughly and fairly with the request brought to them, their integrity and their independence from the Bank’s Management, and their exposure to developmental issues and to living conditions in developing countries.”<sup>1</sup> The three-member Panel is empowered, subject to Board approval, to investigate problems that are alleged to have arisen as a result of the Bank having ignored its own operating policies and procedures.

### Processing Requests

After the Panel receives a Request for Inspection it is processed as follows:

- The Panel decides whether the Request is prima facie not barred from Panel consideration.
- The Panel registers the Request—a purely administrative procedure.
- The Panel sends the Request to Bank Management, which has 21 working-days to respond to the allegations of the Requesters.
- The Panel then conducts a short 21 working-day assessment to determine the eligibility of the Requesters and the Request.
- If the Panel does not recommend an investigation, and the Board of Executive Directors accepts that recommendation, the case is considered closed. The Board, however, may approve an investigation against the Panel’s recommendation if it so warrants.
- Three days after the Board decides on whether or not an investigation should be carried out, the Panel’s Report (including the Request for Inspection and Management’s Response) is publicly available at the Bank’s InfoShop and the respective Bank Country Office.
- If the Panel recommends an investigation, and the Board approves it, the Panel undertakes a full investigation, which is not time-bound.

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<sup>1</sup> IBRD Resolution No. 93-10; IDA Resolution No. 93-6.

- When the Panel completes an investigation, it sends its findings and conclusions on the matters alleged in the Request for Inspection to the Board as well as to Bank Management.
- The Bank Management then has six weeks to submit its recommendations to the Board on what actions the Bank would take in response to the Panel's findings and conclusions.
- The Board then takes the final decision on what should be done based on the Panel's findings and the Bank Management's recommendations.
- Shortly after the Board's decision, the Panel's Report and Management's Recommendation are publicly available through the Bank's InfoShop and the respective Country Office.

## Acknowledgements

From the very beginning of the investigation process the Panel had the opportunity to consult with the Alternate Executive Director for Kenya, Mr. Girmai Abraham before and after its field visit to Kenya and wishes to convey its gratitude to him and his staff for their advice and assistance.

The Panel Members wish to thank especially Dr. Richard Leaky, Head of the Public Service and Secretary to the Cabinet of the Kenya Government for his advice and encouragement during the Panels visit to Nairobi. The Panel is also thankful to Dr. Mohammed Isahakia Permanent Secretary of the Ministry of Natural Resources; Hon. P. Anyang' Nyong'o MP; Prof. Thomas R. Odhiambo, Hon. President African Academy of Scientists; Professor Francis M. Muthuri, Member International Panel of Scientists; Professor Duke Orata, Chairman Water Hyacinth Monitoring Committee; Mr. Chris Kiribu, Chairman, Kenya Manufacturer's Association; Prof. Joseph B. Ojiambo, Kenya LVEMP Executive Secretary, as well as other members of the LVEMP staff. The Panel also wishes to thank RECONCILE for providing assistance and guidance during its field visit.

The country Director of the World Bank in Kenya Mr. Harold Wackman gave generously of his time to the Panel Team. Especial thanks are accorded to him and his staff for exhibiting candor and full cooperation.

Mr. Goran Engstrand, Counsellor, Development Co-operation SIDA, Embassy of Sweden and Mr. Per Karlson, Program Officer, SIDA were most helpful to the Panel during the course of this investigation.

The Panel Team also wish to thank Mr. Peter Raburu the Provincial Commissioner, Nyanza Province; Agnes Yobterick, LVEMP Kisumu Manager and Task Co-ordinator, Dr. G. Ochiel; the Requesters: Executive Chairman of ECOVIC Regional Office, and OSIENALA Executive Director, Obiero Ong'ang'a as well as a number of other officers and members of OSIENALA, and ECOVIC Chairperson, Kenya Chapter, Mary Atieno Amwata. The NGOs represented at the meeting with the Panel included UHAI Lake Forum, LAVIRECHA, KICK, Clean-Up Kisumu as well as the Co-ordinator for the NGO Network, Western Kenya and a lakeside community representative. The Panel Team met directly with the affected people in a number of village communities along the Lake, including Kusa, Rakwaro, Sangorota (where there is a community weevil rearing unit), Dunga, Kaloka and Otiwa, and wishes to extend its appreciation to them for being very open and generous with their time.

Finally, the Panel wishes to express its thanks and appreciation to its consultant Richard Fuggle and to its Senior staff members Eduardo Abbot, Antonia M. Macedo and Alberto Ninio for their expert and professional comments during the preparation of this Report. The Panel also wishes to express its thanks to Georgette Koduah for her assistance and logistical support.

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## ABBREVIATIONS AND ACRONYMS

<b>APL</b>	Adaptable Program Loan
<b>BOD</b>	Biochemical Oxygen Demand
<b>CBO</b>	Community-based Organizations
<b>DO</b>	Dissolved Oxygen
<b>EA</b>	Environmental Assessment
<b>ECOVIC</b>	East African Communities Organization for the Management of Lake Victoria
<b>EIA</b>	Environmental Impact Assessment
<b>GEF</b>	Global Environmental Facility
<b>LVEMP</b>	Lake Victoria Environmental Management Project
<b>IBRD</b>	International Bank for Reconstruction and Development
<b>IDA</b>	International Development Association
<b>IUCN</b>	International Union for the Conservation of Nature
<b>NGO</b>	Non-Governmental Organization
<b>OD</b>	Operational Directive
<b>OSIENALA</b>	Friends of Lake Victoria
<b>RECONCILE</b>	Resources Conflict Institute
<b>SAR</b>	Staff Appraisal Report
<b>SIDA</b>	Swedish International Development Agency
<b>TN</b>	Total Nitrogen
<b>TP</b>	Total Phosphorus
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	United Nations Environment Programme

# **THE INSPECTION PANEL'S REPORT AND FINDINGS ON THE LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT**

## **EXECUTIVE SUMMARY**

### **The Lake Victoria Environmental Management Project (LVEMP)**

1. Lake Victoria is the second largest lake in the world. It is bounded by the three riparian countries of Kenya, Tanzania and Uganda, as shown on Map 1. The resources of the Lake basin are used as a source of food, energy, drinking and irrigation water, shelter and transport. The Lake also serves 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 led to an alarming deterioration in the conditions of the Lake. Overfishing and oxygen depletion at lower depths of the Lake threaten the artisanal fisheries and biodiversity. Massive blooms of algae have developed, while water hyacinth has begun to choke important waterways and landings.
2. The Lake Victoria Environmental Management Project (LVEMP) is being undertaken by the three riparian countries. It is a comprehensive five-year program aimed at the rehabilitation of the Lake ecosystem for the benefit of the people who live in its catchment and area of influence. The Project which became effective on 31 March 1997, is funded by the International Development Association (IDA) and the Global Environmental Facility (GEF) at a total cost of US \$70 million.
3. The main objectives of the LVEMP are (a) to provide the three governments with the necessary skills, information, technical and financial resources and the necessary institutional and legal framework for the Project, (b) to reverse the deterioration of the Aquatic resources and the environmental conditions of the Lake's ecosystem, (c) to maximize the sustainable benefits to the riparian communities by using the basin's resources to generate food, income, potable water and a disease-free environment, (d) to conserve the Lake's biodiversity and genetic resources, and (e) to harmonize national management programs in order to reverse the increasing environmental degradation.
4. The five-year Project is the first phase of a longer-term program, which consists 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 be *lake-wide*, will improve information on the Lake and build the needed capacity for a more effective management.

## Water Hyacinth Control Components of the Project

5. One of the major aims of the Project is to establish sustainable long-term capacity to manage and control the water hyacinth (*Eichornia crassipes*), a free-floating aquatic plant with a high growth rate, which has infested many parts of the Lake. Three methods of control were considered: (a) Mechanical/Manual Control, (b) Chemical Control, and (c) Biological Control.
6. *Mechanical Control* uses mechanized equipment to shred, harvest and remove the hyacinth to shore, or to shred and dump into the Lake. *Manual removal*, which is undertaken by village communities at fish landing and other sites on the bank of the Lake, uses simple management tools. Mechanical harvesting and removal was undertaken in Uganda while mechanical shredding has been piloted in Kenya. The Bank has decided not to support manual control.
7. *Chemical Control* uses aquatic herbicides and is recommended for open waters and shoreline areas where restrictions on water use, following chemical spraying, would not affect the community adversely. Because of the possible accumulation of herbicide residues in fish, the three countries decided to refrain from the use of chemicals.
8. *Biological Control* in the Lake is based on the multiplication and release of two weevil species (*Neochetina bruchi* and *Neochetina eichorniae*) which are well tested for their effectiveness. The adult beetles feed on the leaves while the larvae feed on the plant tissue. The main element in biological control, therefore, is to establish a mass - rearing capacity and a well coordinated field release program. Biological control is being undertaken in all three countries.

## The Request for Inspection

9. The Request for inspection was submitted by RECONCILE (Resources Conflict Institute), a Kenyan non- governmental organization, acting for and on behalf of persons in the Nyanza Gulf portion of Lake Victoria in Kenya (the Requesters). RECONCILE was also authorized to represent OSIENALA (Friends of Lake Victoria), an NGO representing people living in Kisumu, and the Kenya Chapter of ECOVIC (the East African Communities Organization for Management of Lake Victoria Resources) who represent communities living along the Kenya side of the Lake.
10. The Requesters claim that they are likely to suffer harm as a result of failures and omissions of IDA and the International Bank for Reconstruction and Development (the Bank) -- the implementing agency of the GEF -- in the design and implementation of the water hyacinth management component of the Project in

Kenya. Specifically, the Requesters claim that the proposed use of a mechanical method of shredding water hyacinth and letting it sink to the bottom of the Lake would result in ecological and environmental degradation which, in turn, would adversely affect communities living on the shores of the Nyanza Gulf. These communities depend directly on the Lake for their livelihoods since the Gulf is home to freshwater fish and is the source of water for domestic use. The Requesters contend that the ecosystem and human livelihood would be endangered by the resulting pollution. They further claim that the method was selected without a prior Environmental Impact Assessment (EIA) or appropriate community consultation, as required by the loan documents.

11. As stated in the Panel's registration of the Request, the Requesters' allegations could constitute violations of the following Bank Policies and Procedures: OD 4.01 on Environmental Assessment; OD 4.15 on Poverty Reduction; OP 10.04 on Economic Evaluation of Investment Operations; and OD 13.05 on Project Supervision.

## **Management Response**

12. In its Response, received by the Panel on December 20, 1999, Management explained that the mechanical shredding method was a small-scale experimental pilot study. (The pilot site is shown approximately on the shaded area near Kisumu on Map 2.) The pilot study was designed to test one possible tool which local riparian communities could fund and use for fast removal of water hyacinth to alleviate the problems associated with hyacinth blockage of ports, fish landing sites and other sensitive areas. Before accepting its use as a pilot, the Bank had consulted experienced scientists, practitioners and experts. Based on this, Management concluded that the method held sufficient promise to justify the pilot.
13. Regarding the environmental concerns, the Response explained that the water hyacinth shredding pilot was essentially the core of a detailed evaluation of the environmental impact of the shredding methodology. Management claimed it was necessary to do this rather than doing a detailed EA as part of Project preparation because of the absence of sufficient baseline data as well as data describing analogous activities in other similar environments. Management believed that although it could have done more to inform the public of the purpose of the trial, the design and execution of the shredding pilot was completely acceptable, and that the Bank had complied with all relevant policies and procedures.

## **Eligibility of Request**

14. For purposes of determining the eligibility of the Request and the Requesters, the Panel reviewed the evidence submitted by the Requesters and Management. During a field visit between February 7-13, 2000, Panel Members (Edward S. Ayensu, Leader, and Maartje van Putten) visited Nairobi and the relevant Project

area. It then reviewed technical eligibility criteria for requests and agreed that they had all been met.

15. The Panel concluded that the Request and the Management Response contained conflicting assertions and interpretations about the issues, the underlining assumptions, the facts, the compliance with Bank Policies and procedures, and harm. Accordingly, it recommended an investigation into the matters alleged in the Request to the Board of Executive Directors. On March 20, 2000, the Board recorded its approval of the recommendation and authorized the Panel to conduct an investigation.

## **The Investigation Process**

16. The Team that undertook the investigation comprised two Panel members, Edward S. Ayensu (Leader), and his colleague Jim MacNeill (Panel Chair). They were assisted by an Assistant Executive Secretary and a Senior Consultant. The Team interviewed Bank staff associated with the Project in Washington D.C., both before and after the inspection. In Kenya, they interviewed Bank staff and met with Government officials. They also met with officials of Non-Governmental Organizations representing the Requesters, staff of the Project's National Secretariat, implementing scientists and technicians in the field, and directly affected people in village communities. They further studied various documents made available to it by Bank staff, implementing agencies, Non-governmental Organizations and other relevant bodies.

## **State of Water Hyacinth Infestation during Investigation**

17. During the Panel's first visit to the Nyanza Gulf area of the Lake, a vast expanse of water hyacinth mat was seen extending from the shore as far as the eye could see. During the Panel's second visit, the mat had virtually disappeared not only from the site of mechanical shredding, but also far beyond it. The reasons for this were a matter of considerable discussion and opinions varied widely.
18. Just before the Panel's second visit, the Kenyan Project Management declared victory over the water hyacinth. Sober second thoughts, however, prevailed. During its visit to parts of the Lake, the Panel discovered patches of floating (and flowering) mats along the banks and elsewhere. Later, in November, the Panel received reports that large parts of the Lakeshore around the Nyanza Gulf were again covered by heavy mats of water hyacinth and secondary growth.
19. **The advance-retreat-advance of the water hyacinth observed in the past year confirms, in the Panel's view, the importance of the water hyacinth component of the LVEMP Project to the well-being of the Nyanza Gulf region and, perhaps, beyond. It also underlines, in the Panel's view, the importance of ensuring that this component of the Project is implemented as intended and in accordance with applicable Bank policies.**

20. **From the literature on water hyacinth it seems clear that water hyacinth seeds can remain dormant for 15 years and sprout unexpectedly under the appropriate conditions. If so, the residents of the Lake Victoria basin will have to remain ever vigilant and constantly ready to meet the threat as and when it recurs.**

## **Environmental Analysis**

### **Categorization of the Project**

21. OD 4.01 requires an environmental categorization of every Bank-supported project. Accordingly projects must be assigned a category 'A', 'B', or 'C'. For Category 'A' projects, a full EA is required. For Category 'B' projects, although a full EA is not required, environmental analysis is. For Category 'C' projects, no EA or environmental analysis is required.
22. The Staff Appraisal Report of June, 1996 stated that: *"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."*
23. **The Panel finds that in assigning the project a Category 'B' for environmental assessment purposes, the Bank was in compliance with OD 4.01.**

### **The LVEMP Environmental Analysis**

24. The LVEMP EA delineates the broad context within which specific components of the LVEMP are prioritized and justified. It is largely descriptive and provides a general overview of issues and concerns based mainly on literature reviews. The bulk of the study deals with biophysical matters – physical setting, fisheries, biodiversity, water quality, water hyacinth, and wetlands.
25. The EA recognizes explicitly that further analysis may be needed for some future actions under the Project. It then identifies four issues *"...as requiring explicit review of the environmental consequences."* Water hyacinth control methods is one of these. However, the discussion is confined to water hyacinth control by means of biological and chemical methods.
26. The Panel notes that the EA provides no meaningful environmental analysis or discussion of the potential consequences, positive or negative, of the effects that water hyacinth control interventions may have on the livelihoods of different

groups of people. It appears that the stakeholders were not fully consulted during the scoping of the environmental analysis, nor was the EA made available to stakeholders for discussion or review before and after finalization.

## **Environmental Analysis for Water Hyacinth Control**

27. Responsibility for reviewing chemical and biological options and making recommendations on the use of chemical and biological methods in areas worst affected by water hyacinth was assigned to the Government of Uganda. It commissioned an Environmental Impact Study by the consultants, Aquatics Unlimited. The Aquatics Unlimited study proposed the adoption of chemical, biological, manual, and mechanical control measures. It nevertheless observed that the type of control used in a particular area should reflect the physical characteristics of the area and the associated water uses. No details, models, or decision trees were provided for determining how these factors were to be used to decide on a particular control strategy at a particular location. The usefulness of the document for guiding the appropriate selection of control methods was therefore limited.
28. In alleging that there was no Environmental Impact Assessment, it is clear that the Requesters were concerned solely with the mechanical shredding of water hyacinth and its dumping into the Nyanza Gulf of the Lake. Management acknowledges that the Borrower's request for inclusion of the hyacinth shredding work into the LVEMP came late in project implementation. The shredding technology was considered when the political pressure in Kenya was so intense and the economic damage by water hyacinth infestation to fishing villages so compelling that a supplementary solution to the biological control already underway was sought by the Ministry of Environment and Natural Resources. Having learned that a chopping machine had been developed in the USA, a Government of Kenya delegation visited it in October 1997 to see it in action. They were impressed and decided to proceed with procurement with support from the Bank. Following an International Competitive Bidding, a tender was awarded for the pilot shredding of 1,500 ha of water hyacinth mats in the Nyanza Gulf of Lake Victoria (as shown approximately on Map 2).
29. Management has explained at length that the mechanical shredding tender is only an experimental or trial pilot of the shredding process, and accordingly, has the limited objectives of testing the physical, economic and environmental sustainability, and the conditions under which the method would be appropriate for more general use. The tender had accordingly been prepared in keeping with the experimental approach. It was not large enough to cause a significant impact on the ecology of Lake Victoria as a whole but of sufficient size to allow water quality monitoring to pick up changes that might be indicative of the impact of this method of control should it have widespread use on the Lake at some time in the future.

30. In the SAR, two types of activities were distinguished: “*pilot zone*” activities and “*lake-wide*” activities. A total of four pilot zones were identified in Kenya in which a number of activities would be undertaken “in an integrated way” and designed to reduce water hyacinth to manageable levels. The conceptualization of the mechanical shredding as a pilot project fits in with this general approach.

### **Shredding and Sinking as a “Core” of an EA**

31. Management has given its reasons as to why it was necessary to use the water hyacinth shredding tender as the core of a detailed evaluation of the environmental impact of the shredding method of control. It argues that in the absence of sufficient baseline data, and data describing analogous activities in other similar environments, there is virtually no chance of preparing a meaningful and useful EA. In this connection Management observed that it would be impossible to do a thorough EA in anything less than 3-5 years or more (the time it would take to collect the minimum amount of baseline data).
32. In interviews, some Bank staff were of the view that a full environmental analysis was not necessary prior to undertaking the pilot but felt that a preliminary evaluation of the likely consequences of the pilot was essential. One observed that environmental assessments of the category ‘A’ type had been done many times in many countries with less than the full relevant baseline data, especially in situations of urgency. The point was not to pretend that the data were complete, or leading decision makers to make decisions based on data which were inadequate, without their knowing that fact. In particular, their attention was to be drawn to any risks.
33. Management’s detailed discussion of the queries raised about the possible impact of the shredding and sinking itself suggests that lack of baseline information was not so abysmal as to render impossible a “meaningful and useful” review of the possible environmental consequences.
34. A crucial question concerns the fate of the water hyacinth seeds during and after shredding and sinking. The Management Response states that this was one of the issues raised with the experts consulted. The Task Team Leader acknowledged in an interview that the seeds would not be destroyed by shredding and would remain viable for many years. He did not think, however, that they would germinate in the unfavorable conditions prevailing at the Lake bottom. The evidence suggests, however, that under conditions of reasonable aeration and light, the seeds would germinate and either float to the surface or (in very shallow waters) get rooted in the bottom mud and grow to the surface to further propagate. Many world experts are of the view that the only viable strategy in water hyacinth control is continual monitoring and surveillance.



## Technical Consultations

35. Management did not undertake a *“review of the environmental consequences”* of the shredding pilot (deciding instead to treat it as an environmental assessment in the making). However, it did recognize the need to identify possible environmental hazards. Thus, before deciding to proceed with the shredding, it consulted a formidable group of scientists and practitioners, including recognized experts on the ecology of Lake Victoria and on water hyacinth control.
36. The experts were asked to consider four environmentally related issues. It appears, however, that the questions put to them concerned possible environmental hazards for the whole of Lake Victoria rather than possible environmental risks in the specific area subject to the shredding operation (i.e., the area immediately around Kisumu in the Nyanza Gulf). This raises questions concerning compliance with paragraph 1 of OD 4.01, which states that *“... EA covers project-specific and other environmental impacts in the area of influence of a project.”*
37. Unfortunately, the Panel was unable to obtain documentary evidence concerning these consultations. The Task Team Manager involved in the matter spoke of *“minutes of phone conversations”* in his files, which he thought would not be useful as they did not cover everything. A staff member described the procedure as *“diligent enquiry.”* However, given the importance of the consultation (claimed to have encompassed 24 named scientists and experts) the absence of any official or substantive documentation whatsoever is unfortunate and borders on casualness in decision-making. In sum, there is no official documentary support for the part of the Management Response which concerns the technical consultation process, including the specific issues said to have been discussed, and the outcome of the consultation.

## Consultations with Affected Groups and NGOs

38. The Requesters allege that the introduction of mechanical shredding and sinking did not involve local communities or other stakeholders in its design or implementation. Paragraph 19 of OD 4.01 states that the Bank expects the borrower to take the views of affected groups and local NGOs fully into account in project design and implementation and in particular the preparation of EAs. Consultations *“are a valuable way to improve decision-making to obtain feedback on the EA process and draft report and to increase community cooperation in implementing the recommendations of the EA”*
39. In its Response, Management observes that it had not done enough to inform the public. *“Although Government project management has made an effort to introduce transparency into the Project, it could have done a more thorough job of*

*informing the public of the purpose of the shredding tender.*” Management concluded that the complaints made by the Requesters were understandable but “*not correct in substance;*” first, because a broad-based environmental review was done for the LVEMP as a whole and this became a public document and, second, because the tender that was the focus of the allegation was only a pilot with limited objectives. Significant progress had been made with public involvement, ownership and easy accessibility to the Project, according to Management, but there was still some distance to go.

### **The Teleconference of 13<sup>th</sup> August 1999**

40. From the evidence available to the Panel, it appears that local groups or NGOs were not properly consulted, as required under OD 4.01, concerning the decision to go ahead and ask for bids for mechanical shredding in November 1997. Nor were they consulted about the design work, if any, that led to that decision.
41. In June 1999 (19 months after the invitation for Bids), the Project Managers issued a “*Priority Action Plan*” in which they stated that they would now determine, in consultation with the contractor and stakeholders, areas requiring mechanical harvesting, and they would take part in monitoring the harvesting exercise in collaboration with relevant institutions and Government and Non-Government Agencies.
42. The first attempt at formal consultation was undertaken by the Bank on August 13, 1999. It hosted a teleconference at the World Bank Office in Nairobi for various stakeholders, including NGOs, interested scientists and others, to listen to concerns expressed on the environmental, economic and social impact of the mechanical shredding and sinking of water hyacinth on Lake Victoria. At this conference an independent group of scientists, including affected groups and other stakeholders, was appointed to oversee the monitoring program for the shredding pilot
43. The Panel finds it surprising that some NGOs who had been closely associated with the preparation of LVEMP were not enlisted in the design of the shredding project. For example, OSIENALA had previously organized a workshop under the Project with the support of the Bank, UNDP, IUCN and UNEP.

### **Misunderstandings about Mechanical Shredding**

44. Management admits not being “*sufficiently proactive in explaining the purpose of the water hyacinth tender.*” The Panel finds it difficult to understand how the Borrower, as Management alleges, could have misunderstood the objective of the tender and believed that shredding and sinking was a lake wide solution to water hyacinth control. It was the Borrower that initiated the shredding and sinking operation. And it seems evident that the Bank agreed to finance the operation only as one of the trial pilots, and one not to be applied lake wide unless subsequently found to be environmentally, socially and economically feasible.

45. Prior to granting a “no-objection” to the shredding tender, Management recognized the need for consultation at least with “...*recognized experts in water hyacinth control...*” In doing so, however, Management appears to have focused on questions concerning possible environmental hazards for the lake as a whole, and neglected questions about possible risks in the specific area subject to the shredding operation.
46. **In the Panel’s view, some consultations should have been undertaken not only with experts but also with potentially affected people, as required in paragraph 19 of OD 4.01.** Indeed, involving them in the design of the shredding pilot could have avoided a lot of unnecessary misunderstanding. And it may also have had a positive influence on the design and implementation of the pilot project.
47. Management maintains that, in the “absence of sufficient baseline data, and data describing analogous activities in other similar environments...,” there was virtually no chance of preparing a “review of the environmental consequences” of the shredding operation prior to the tender. While this may be questioned, the Panel finds acceptable the approach taken by Management; i.e., viewing the pilot as an environmental-assessment-in-the-making, and putting in place a monitoring system to provide the environmental and other data needed to subsequently determine whether the method is sustainable and would be appropriate for more general use. Unfortunately, however, both the design and implementation of the shredding pilot’s monitoring program was a failure. **Thus, Management is left with a situation in which there was no prior review of the environmental consequences of the method and the environmental and other data needed for a subsequent assessment of the method have not been obtained. This appears to contradict OD 4.01 concerning the “purpose and nature of EA,” including “to improve decision making and to ensure that the project options under consideration are environmentally sound and sustainable.”**
48. **In view of the above, the Panel has no other choice but to conclude that the Bank is not in full compliance with OD 4.01.**

## Project Supervision

### Monitoring of Shredding Program

49. The issues raised in the Request for Inspection led the Panel to examine the adequacy of the supervision process. Noting that “Project Supervision is one of the Bank’s most important activities,” paragraphs 42 through 47 of OD 13.05 provides the basic requirements necessary for establishing and conducting sound supervision planning. Among such requirements, it requires a supervision plan to include “... (d) *the borrower’s contribution to supervision, including ... (ii)*

*monitoring efforts; (iii) measures for establishing or improving data collection systems; and (iv) data and reports, and timing of their submission to the Bank.”*

50. Management has explained that a monitoring program was envisaged as an integral part of the pilot study of water hyacinth shredding. While the tender was not large enough to cause a significant impact on the ecology of the Lake Victoria, Management felt that it was of sufficient size to allow water quality monitoring to pick up changes in surrounding waters. The pilot's objectives were limited to testing the physical, economic and environmental sustainability of the method, and the conditions under which the method would be appropriate for more general use. Monitoring the cost of shredding operations over a stipulated 12-month period would also enable a more accurate economic assessment to be made should it be considered for more widespread use in the Lake at some point in the future.
51. A Water Quality and Ecosystem Management Component has been in place since the beginning of the Project. Management points out, however, that OSIENALA and other groups did alert the Task Team to the fact that the activities of the monitoring groups lacked transparency and the involvement of the broader Kenyan scientific community. During the teleconference of August 13 1999, a Water Hyacinth Control Monitoring Committee (WHCMC) was set up to include impartial scientific advisors. It outlined a program for scientific and environmental monitoring of the Kenya portion of Lake Victoria in relation to water hyacinth control.
52. That little, if any, progress had been made in providing the essential basic scientific infrastructure to underpin the monitoring required to justify the pilot shredding program, was evident to the Inspection Panel Team when it visited the Kisumu laboratory on 28 July 2000. The Panel witnessed first-hand the dilapidated state of the building housing the laboratory and the lack of basic facilities. Its inquiries also revealed seriously flawed sampling procedures. The Team's inquiries relating to the scientific design of the sampling frame revealed serious shortcomings. There was no concurrent monitoring of fish catches, reactions of riparian communities, and aquatic or shoreline biodiversity. Those questioned hoped that this information might be available from other components of the LVEMP, but no effort had been made to ascertain whether or not such data was available or being collected.
53. With respect to the "economic experiment", also associated with the pilot project, no data could be provided to the Inspection Panel on the detailed costs of the water hyacinth shredding. This casts doubt on the claim that the water hyacinth shredding tender is part of an experiment to gather data to assess the conditions under which the method would be appropriate for more general use.
54. The Panel's observations lead reluctantly to the conclusion that there has been a serious lack of attention to the scientific underpinnings of the water hyacinth

shredding pilot. An adequate water sampling and analysis program was not put in place. A before-shredding baseline was not established. No samples were collected during the shredding operation. The laboratory and other required scientific infrastructure was not, and is not yet, in place. Much relevant data on related factors have simply not been collected and that which has is largely inadequate, inappropriate, or useless. Data with which to compare shredding and other forms of control are simply inadequate.

55. **In the Panel's view, given the weakness of the research and experimental design and the inadequacy of the facilities and equipment required to undertake appropriate sampling and monitoring, the Water Hyacinth shredding pilot must be deemed a failure.**

### **Supervision Missions**

56. Between June 1998 and June 2000, the Bank undertook two Supervision Missions and one Mid-Term Review Mission for the Kenyan component of LVEMP. The Panel has examined the resulting reports and aide-memoires and it has discussed them with some of the key staff involved.
57. **The First Supervision Mission (June 1998)** appears to have been acutely aware of the need for the requisite scientific infrastructure to be in place and for scientific staff to be properly organized to enable effective monitoring of all aspects of the LVEMP. The Mission's Aide Memoire refers to the urgent need for the early rehabilitation and proper functioning of the regional Water Quality Laboratory at Kisumu to enable LVEMP Water Quality Projects to meet their objectives. It also expressed deep concern that Water Quality components had been starved of funds and unable to do any useful work. It observed that these *"critically important parts of the project"* had scarcely begun their work.
58. The Aide Memoire attributes the non-performance of the technical program for water quality monitoring and other components of the Kenya part of LVEMP, in considerable part, to procurement and disbursement delays. The Mission report observed in its opening paragraph that the project, which had already completed its first year, had made very slow progress in most areas and that procurement in particular had fallen far behind a reasonable schedule while disbursements had been extremely slow. Funds were not flowing to implementing groups in Kisumu and elsewhere in the Lake catchment. The procurement delays had adversely affected progress of the entire project. The report itemized some procurement matters which needed urgent attention.
59. To ensure that the relevant actions were taken, the Mission report proceeded to detail 14 specific actions that had to be taken as a matter of urgency, including (among others) early rehabilitation of the laboratory block in Kisumu which it estimated could be available within three months.

## The 1999 Mid-Term Review Mission

60. In accordance with a previous decision a Mid-Term Review (MTR) was undertaken in June 1999. The MTR focussed on both the supervision of on-going Project activities in Kenya and a review of proposed activities to be accomplished for the remaining 2.5 years of the Project.
61. Although the MTR's Aide Memoire incorporates by reference all the activities yet to be performed with regard to the water hyacinth shredding pilot, the Panel finds it difficult to understand why the tone of the Aide Memoire changed in comparison with that of the previous year. It appears unperturbed by the fact that some "critically important parts" of the Water Quality component in Kisumu, to which urgent attention had been drawn by the 1998 Mission, were still not in place after one whole year had elapsed. (It was not until the Second Supervision Mission which took place in June 2000 that serious concern was expressed once again about the poor performance of the Project.)
62. The MTR's Aide Memoire refers to "*minor progress*" being made in Kenya despite the fact that "*2.5 years have passed.*" It goes on to assert optimistically that "*... the project is now ready for full scale implementation of its technical program.*" It notes that "*...a new system of disbursements is expected to be in place by the next supervision mission....*" That is, in approximately twelve months. However (as it turned out), this would be too late to ensure that the scientific and other equipment required for the monitoring program was in place before the pilot commenced. In fact, it would have had to be in place some time before the pilot commenced in order to ensure that proper baselines were established.
63. The MTR's draft Aide Memoire was drafted between June 7-18, 1999 and was submitted to the Government in final form on January 20, 2000, seven clear months after the completion of the Mission. In the transmittal letter, Management asserts with confidence that "*The LVEMP is entering a new and exciting phase. Most of the equipment and rehabilitation works are now in place and components have begun implementation of the individual activities with renewed energy.*" (Emphasis added). The letter ends by extending "*congratulations on a job well done to your LVEMP implementation team.*" By February 2000, one month later, it had become evident in Washington D.C. that the very slow implementation of LVEMP in Kenya, as indicated by disbursements, might affect the financing of the Project. An e-mail was sent on February 2<sup>nd</sup> to the Kenya Government which indicated the likelihood of canceling at least US\$7 million from the IDA Credit and GEF Grant.

## The Second Supervision Mission (June 2000)

64. It was not until the next regular (June 2000) Supervision Mission (after the Request had been received) that serious concern was expressed once again within the text of an Aide Memoire about the poor performance of the Project. The Aide Memoire chronicles a long list of unresolved problems relating to water

quality monitoring, among others, that were supposed to have been addressed as a result of the 1998 Mission and as priority activities under the Mid-Term Review a year earlier.

65. It appears that the 2000 Supervision Mission was *“forced to abandon”* its original mission plan in order to determine *“which of the many problems besetting this Project lay in the critical path of the Project implementation.”* (Emphasis in original). Accordingly, the Mission undertook to: (a) address the problems of cash flow in the LVEMP; (b) assess the finance channels supporting project components; (c) identify the problems in the existing system and propose solutions to the cash flow problem; (d) examine the role of the Project Secretariat.

### **The Role of the Secretariat**

66. The MTR Mission appears to have been impressed with the performance of the Kenya National Secretariat. It asserted that the Kenya National Secretariat was functioning well and that no major changes in its composition or funding were needed.
67. The Second (June 2000) Supervision Mission, on the other hand, revealed that of the 25% disbursed out of the total amount available to the Project, expenses of the Project Secretariat accounted for over 40%. The Mission remarked that the Secretariat was still spending at a rate twice that expected at the beginning of the Project. Furthermore, with 60% of the Project implementation time gone, only a quarter of the Project funds have been expended and most of this for goods and works. *“Extraordinarily little of the recurrent budget (operational funds) has been channeled to the various Project components.”* On the performance of the Secretariat, the Mission stated that the Secretariat needed to *“push harder”* for information and become *“more proactive”* in its administrative role. It drew attention to procurement packages that were only partially procured and delivered. (One package of vital laboratory equipment had been stuck at Nairobi airport for almost 10 months)
68. On the subject of funding, the TTL confirmed the Panel’s finding that a 7-member high-level Panel of internationally renowned scientists which was to serve as the overall advisory group for scientific studies on the Lake had not been functioning as no funding had been provided for them.
69. **Procurement and disbursement delays were a major factor in the poor implementation of the LVEMP Water quality-monitoring program, as Management has found. In the Panel’s view, however, this was compounded when a whole year was lost in ensuring that corrective action was taken. The expressions of optimism and confidence on the status of the Kenya portion of the Project contained in the 1999 Aide Memoire, and in the transmittal letter, could, and in the Panel’s view, did mislead Project Management and lull it into complacency.**

70. **On the basis of the foregoing, the Panel finds that Management failed to comply with paragraph 42 of OD.13.05 because supervision of the design and data collection systems for the pilot was inadequate and because supervision of the implementation of the monitoring systems was also inadequate.**



## Poverty Reduction

71. The Request raises questions concerning OD 4.15 on Poverty Reduction. It maintains mechanical shredding would result in ecological and environmental degradation of Lake Victoria in the Nyanza Gulf and this in turn would impact adversely on *“the livelihoods and well-being”* of these communities. If this allegation were to be substantiated, it would constitute a violation of Bank’s Operational Directive on Poverty Reduction, OD 4.15.
72. In its Response, Management maintains that it is the water hyacinth infestation itself that is a major environmental and economic calamity and *“a major contributor to poverty”* in and around the Lake. Removal of the water hyacinth will eliminate this poverty-inducing factor. Management draws attention to the main detrimental effects of the spread of mats of water hyacinth as identified during project preparation. Using newspaper and technical reports, Management provides copious illustrations of how the above effects find expression in the lives of people living around the Lake in the three riparian countries. Management also considered in detail and rejected the scientific arguments presented by the Requesters on the polluting effects of decaying water hyacinth, including bioaccumulation of toxins, release of large amounts of nitrate into the Lake, and increased eutrophication.
73. **The Panel is satisfied that: (i) heavy water hyacinth infestation is a major threat to the livelihoods and wellbeing of Lakeshore communities and a significant contributor to poverty; (ii) the scientific arguments against possible polluting effects of decaying shredded water hyacinth appear convincing.**
74. **In the Panel’s view, the social and economic benefits of the water hyacinth control program have been significant and have been to the advantage of the overwhelming majority of Lakeshore dwellers. There is no evidence to suggest that this is not true of the mechanical harvesting component. At the same time, the Panel witnessed some harm to small numbers of people engaged in the nascent utilization industry. The Panel is satisfied, however, that this harm is not the outcome of the Bank’s failure to comply with its policies and procedures. Accordingly, the Panel finds that the Bank is in compliance with OD 4.15.**

## Economic Evaluation

75. The Request raises the issue of alternatives for water hyacinth control and management. This is relevant because OP 10.04 on Economic Evaluation of

Investment Operations states that *“Consideration of alternatives is one of the most important features of proper project analysis throughout the project cycle”*

### **Water Hyacinth Control Methods: Alternatives and Costs**

76. According to Management, preliminary work by the Preparation Team suggested the following costs of the various control methods that have been used in the riparian countries to control the weed: Mechanical removal - \$3000/ha; Shredding and sinking - \$1000/ha; Chemical control \$100 – 300/ha; and Biological Control \$ 30 - \$50/ha.
77. Management states that only biological control holds significant prospects for long-term, large-scale management of water hyacinth. However, hyacinth infestation could meanwhile take a heavy toll on the economic life of the communities around the infestation areas, especially fish landing beaches, water supply and power intakes, ports and ferry routes. In such a situation a rapid emergency response can best be provided by mechanical removal, of which it appears shredding and sinking is the preferred option.

### **Sustainability of Mechanical Shredding**

78. The Request maintains that *“little or no regard has been had to the sustainable management of the water hyacinth in using this method of mechanical removal ...”* OP 10.04 states as follows: *“To obtain a reasonable assurance that the Project’s benefits will be sustained throughout the life of the project, the Bank assesses whether critical private and institutional stakeholders have or will have the incentives to implement the project successfully.”*
79. Management does not address this issue fully. It expresses the view that if the shredding method works, *“it would be a tool that could be used and funded by local groups and organizations to open landing beaches, clear paths to ferry and cargo terminals so ships could dock and open access to the Lake for fishermen to get their fishing sites easily and quickly.”* It is not stated who the local groups and organizations are and how they would be mobilized to fund this high-cost operation on a sustainable basis. It seems most unlikely that this could be managed by the fisherfolk and village communities around the Lake.
80. Cost may not be an obstacle to sustaining a mechanical harvesting operation in certain cases. A large utility such as an Electricity Board (in the case of Uganda) or the Government itself, with possible support from donor agencies, could manage it. In any case, there is no evidence that mechanical harvesting would not be sustainable for specific high priority strategic locations, within a broader program of Lake-wide biological control.

## **Economic Utilization and Harm or Potential Harm**

81. The Requesters proposed that economic utilization of water hyacinth should be promoted instead of shredding and sinking. In its Response, Management cites a proposal to test the manufacture of biogas in Uganda near the Owen Falls dam from a combination of water hyacinth and sugar cane tops. Nowhere else in the text, however, does Management elaborate on potential economic utilization.
82. The shredding contract itself required that the water hyacinth harvested from 500 meters of the shore to be deposited on land. It could then be used by the nascent utilization industry, some elements of which the Panel Team visited in and near Kisumu. While extremely difficult to judge, it seems possible that these fledgling enterprises could well multiply in the course of time in line with experience elsewhere. However, it appears that the program to eradicate (or at least control the spread of) water hyacinth, has rendered these emerging enterprises virtually inoperable.
83. This raises the question of possible harm. In the Panel's view, the vast majority of people and communities around the Lake have and should continue to benefit enormously from the program to control the spread of water hyacinth. While that must be kept in mind, it is also evident that the program may have resulted in some harm to the as yet small numbers of people engaged in the nascent utilization industry. Is this harm, however small, a necessary consequence of the water hyacinth control program? Two observations and a question: (i) the water hyacinth is in the Lake to stay; (ii) the amount of hyacinth needed to sustain and grow the nascent utilization industry is minute in comparison with the actual and potential volume of infestation around the Lake; (iii) in a continuing program to manage the spread of the water hyacinth, is it possible to find ways to enable the harvesting and removal of the small quantities needed? If it were, the harm could be avoided and, over time, the potential benefits of utilization might be realized. It would seem to be worth another look.
84. **The Panel is satisfied that in arriving at the mechanical shredding tender, Management did consider alternatives. With regard to the sustainability of shredding operations, although Management has not provided clear guidelines as to who would bear the cost of future shredding operations, no evidence was available to indicate that the method would in actual fact be unsustainable in view of cost.**
85. **In the light of explanations and analyses provided by Management and upon its own field observations, the Panel concludes that the Bank is in compliance with OP 10.04.**

## **Summary of Conclusions**

**86. In brief, the Report concludes that Management is in compliance with OD 4.01 (Environmental Assessment) with respect to categorization of the Project, OD 4.15 (Poverty Alleviation) and OP 10.04 (Economic Evaluation of Investment Operations). It further concludes that Management is not in full compliance with OD 4.01 with respect to meeting the overall purpose and nature of the OD including, as acknowledged by Management, adequate consultations with affected groups and NGOs. Nor is it in compliance with paragraph 42 of OD 13.05 on Bank Supervision.**

# **Part One**

## **Introduction**

## CHAPTER 1

### The Lake Victoria Environmental Management Project (LVEMP)

87. Lake Victoria is the second largest lake in the world, second only to Lake Superior. It is bounded by three riparian countries: Kenya, Tanzania and Uganda, as shown on Map 1. During the past half century, there has been a steady increase in population growth around the Lake, at rates among the highest in the world. As a result, pressures on the Lake due to the volume of human, agricultural and industrial waste have increased enormously, undermining the environmental integrity of the Lake. Overfishing and oxygen depletion at lower depths of the Lake are endangering artisanal fisheries and biodiversity. Massive blooms of algae have developed while water hyacinth has begun to choke important waterways and landings. Communities that rely on the resources of the basin as a source of food, fiber, drinking and irrigated water and transportation are under threat.
88. In 1988, the East African Co-operation (EAC) sponsored a high-level seminar in Arusha, Tanzania, to consider how the Lake and its resources should be managed in light of growing environmental threats. On August 5, 1994, the governments of Kenya, Tanzania and Uganda entered into a Tripartite Agreement to launch and prepare jointly the Lake Victoria Environmental Management Program.<sup>2</sup>
89. This Tripartite Agreement provided the vision that led to the preparation of the first five-year phase of an integrated project known as the Lake Victoria Environmental Management Project (LVEMP). On July 30 1996 the International Development Association (IDA) and the Global Environmental Facility (GEF) agreed to support the first five-year phase of the program. An IDA Credit for an amount equivalent to US\$12.8 million and a GEF Grant of US\$11.5 million equivalent was provided to the Republic of Kenya to support its foreign exchange costs of the LVEMP. Similar financing for the Project has been provided to the United Republic of Tanzania and the Republic of Uganda. The financing covers a number of components in all three countries including US\$8.3 million for a water hyacinth control component. In Kenya, US\$2.8 million is allocated to this component. The loan documents for this Project were signed on September 10, 1996 and became effective on March 31, 1997.
90. According to the Staff Appraisal Report (SAR), *"The LVEMP is a comprehensive program aimed at rehabilitation of the lake ecosystem for the benefit of the*

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<sup>2</sup> See IDA, *Staff Appraisal Report. The Republic of Kenya, United Republic of Tanzania, and the Republic of Uganda for the Lake Victoria Environmental Management Project*, Report No. 15429-AFR (June 18, 1996) [*hereinafter* Staff Appraisal Report or "SAR"] (at §2.2).

people who live in the catchment, the national economies of which they are part, and the global economy."<sup>3</sup> It has several objectives. It is designed to "(a) maximize the sustainable benefits to riparian communities from using the resources 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."<sup>4</sup> And it is to provide the three governments with the necessary skills, information, technical and financial resources and the necessary institutional and legal framework for the Project.

91. The Project is the first phase of a longer-term program and comprises two broad sets of activities. The first addresses specific environmental threats by means of selected pilot initiatives. The second, which will be lake-wide, is designed to improve information on the Lake and build the needed capacity for more effective management.

### **1.1. Water Hyacinth Control Components of the Project**

92. Since the Water Hyacinth Control component is the focus of this investigation, it may be useful to provide some background information on the plant. The water hyacinth (*Eichornia crassipes*) is a free-floating aquatic plant belonging to the family Pontederaceae. It is said to have originated from the Brazilian Amazon and has spread to many tropical and subtropical regions of the world. The plant is today widespread in many water bodies of Africa where it seems to be endemic in the rivers and lakes in western, central, eastern and southern portions of the continent.
93. The plant has a high growth rate with a photosynthetic fixation efficiency of 1.25% as compared with 1.0% and 0.25% for maize and peanuts respectively. Since it develops in regions with a solar energy constant of 450–550 watts/m<sup>2</sup> the water bodies of tropical and subtropical Africa provide perfect habitats. It has been established that one hyacinth plant multiplies into 1,200 within 120 days, which represents approximately a seven-fold increase in 50 days.

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<sup>3</sup> SAR at § 3.1.

<sup>4</sup> Ibid.



Panel member examining whole plant

94. One of the major aims of the Project is to establish sustainable long-term capacity to manage and control the water hyacinth and other invasive weeds in Lake Victoria. Three methods were considered: (a) Mechanical/Manual Control, (b) Chemical Control and (c) Biological Control.
95. *Mechanical Control*, the focus of this investigation, uses mechanized equipment to remove the water hyacinth and other aquatic plants from the water surface.



This can be achieved in two ways. The hyacinth can be shredded, harvested and moved to the shore. Or, it may be shredded and dumped into the bottom of the Lake. When harvested and dumped on shore, the hyacinth can be used for other purposes including fertilizers, microbial protein, feed for animals, fiber boards, biogas and paper pulp. The method is capital intensive and requires skilled labor for the operation and maintenance of the machines. Like other methods of control, shredding and removal may cause some degree of environmental impact on terrestrial habitats while shredding and dumping may create negative environmental impacts on aquatic environments.

96. *Straight manual removal* of water hyacinth, in contrast to mechanical control, requires only simple tools. This method, however, is used mostly at fish landing sites and near the banks of the water body.
97. *Chemical Control*, in the form of aquatic herbicides, was originally recommended for use in open waters and shoreline areas where water use restrictions would not affect the community adversely. The Regional Policy and Steering Committee (RPSC) of LVEMP appointed a committee of experts to review and advise on the use of herbicides. The Committee's report was presented to an International Panel of Scientists on August 23, 1998. They concluded that the use of herbicides was risky and, subsequently, on September 28, 1998, the RPSC decided that the use of herbicides should be deferred until further research on the efficacy, safety and the environmental impact of the recommended chemical compounds had been completed in the three countries.
98. Under the LVEMP it was agreed that *Biological Control* was the most sustainable way of managing the uncontrolled proliferation of the plant in Lake Victoria. The biological control program is based on the multiplication and release of two weevil species (*Neochetina bruchi* and *Neochetina eichorniae*), which are well tested for their effectiveness. The adult beetles feed on the leaves and place the plant under stress through excessive transpiration. The eggs of the beetles are laid on the leaves and feed on the plant tissue. This creates further stress on the plant and enables pathogens to establish themselves as the larvae pupate on the root in the water and result in high weevil population capable of placing further stress on the water hyacinth so that it does not flower and therefore does not set seed. Furthermore, the speed with which vegetative reproduction occurs is greatly decreased and, in many cases, the plant population is reduced by thirty to fifty percent.

99. Biological control requires the establishment of mass rearing capacity in units around the shores of the Lake. It also requires a well-coordinated field release program involving local communities and an effective monitoring and training program. The agricultural research organizations of the three riparian countries (the Kenya Agricultural Research Institute (KARI), the Uganda National Agricultural Research Organization (NARO) and the Tanzania Department of Research and Training) were charged with these responsibilities.



Staff of Kari explaining the biology and the weevils rearing project to the Inspection Panel team.

## **1.2. Importance of the Water Hyacinth Control Component for the Socio-Economic Life of the Region**

100. The resources of the Lake basin are used as a source of food, energy, drinking and irrigation water, shelter, and transport and as a repository of human and agricultural waste. Water hyacinth was blocking access to ports, fisherfolk community fish landings and watering points. It also reduced the operational efficiency of the Owen Falls hydroelectric plant. The eutrophication of the Lake (i.e. large nutrient concentrations resulting in high productivity, algal blooms and

periods of oxygen deficiency) is a continuing concern affecting the many domestic, agricultural and industrial uses of the Lake.

101. There is also evidence that changes in water quality have favored the Nile perch (a previously exotic species) and contributed to the extinction of endemic fish species. Reports of frequent fish kills in recent years have raised questions on the sustainability of the fishery.<sup>5</sup> According to the SAR, "...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."<sup>6</sup>
102. The invasion of water hyacinth has imposed enormous economic, social and environmental costs on the region. *"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 largely be avoided if the LVEMP were successfully implemented."*<sup>7</sup> Deterioration of water quality *"may impose additional water supply costs which are estimated to be a minimum of US\$3.5million p.a. (present value US\$15 million) and would increase considerably without action."*<sup>8</sup>

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<sup>5</sup> See SAR, *supra* note 1, at § 1.24. "Aside from the near total loss of 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." § 1.19 of the SAR also states that: "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 changes. First the introduction of the 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."

<sup>6</sup> SAR, *supra* note 1, at § 5.19.

<sup>7</sup> *Id.* at § 5.20.

<sup>8</sup> *Id.* at § 5.21.

## Chapter 2

### The Request for Inspection

#### 2.1. The Requesters' Allegations

103. On October 12, 1999, the Panel received a Request for Inspection (the "Request") related to the Kenya portion of the Lake Victoria Environmental Management Project. The Request was submitted by RECONCILE (Resources Conflict Institute), a Kenyan non- governmental organization, acting for and on behalf of persons in the Nyanza Gulf area of Lake Victoria within the Republic of Kenya (the Requesters). RECONCILE was also authorized to represent OSIENALA (Friends of Lake Victoria), an NGO representing people who live in Kisumu, and the Kenya Chapter of ECOVIC (the East African Communities Organization for Management of Lake Victoria Resources) who represent communities living along the Kenya side of Lake Victoria.
104. The Requesters claimed that they were likely to suffer harm as a result of failures and omissions of IDA and the International Bank for Reconstruction and Development (the World Bank) as administrator of the GEF, in the design and implementation of the water hyacinth management component (Part B) of the Project in Kenya.
105. Specifically, the Requesters claimed that the proposed use of a mechanical method for shredding water hyacinth and returning it to the water to sink to the bottom of the Lake would result in ecological and environmental degradation which, in turn, would adversely affect communities living on the shores at the Nyanza Gulf. These communities depend directly on the Lake for their livelihoods, since the Gulf is home to freshwater fish and the source of water for domestic use. The Requesters contend that the ecosystem and human livelihood would be endangered by the resulting pollution.
106. They further claimed that the method used for hyacinth control was selected without a prior Environmental Assessment (EA) or appropriate community consultation.

107. As stated in the Panel's registration of the Request, the Requesters' allegations could constitute violations of, *inter alia*, the following Bank Policies and Procedures: OD 4.01 on Environmental Assessment; OD 4.15 on Poverty Alleviation; OP 10.04 on Economic Evaluation of Investment Operations; and OD 13.05 on Project Supervision.

## 2.2. Management Response

108. On December 20, 1999 the Panel received Management's Response to the allegations in the Request. Management noted the wider context of the LVEMP, and explained that it was designed to collect baseline data, identify and prioritize problems and to experiment with possible solutions to these problems through a series of experimental pilots. In this context, all of the possible methods of controlling water hyacinth were by definition experimental pilots to determine their practicality and their economic and financial suitability for large-scale use on the Lake. The three borrowing Governments had decided, however, to drop one method, the trial use of herbicides, from the Project. The Project had thus supported the piloting of mechanical harvesting/removal to land disposal in Uganda, the mechanical shredding trial in Kenya, and biological control in all three countries. In addition, limited Project funds had been used for the manual removal of hyacinth by local communities at selected sites, though the Bank discouraged the use of project funds to remunerate local voluntary self-help contributions. Moreover, the Bank was concerned about manual removal hazards such as bilharzia, malaria, and snakes associated with extensive exposure to Lake waters.
109. The Response explained that both mechanical trials were small scale, covering a tiny part of the Lake, as shown approximately on the shaded area near Kisumu on Map 2. Owing to the prohibitive cost of mechanical harvesting followed by disposal on land, Management claimed it was important to test the shredding method as one possible tool for local riparian communities to fund and use for fast removal to alleviate the problems associated with hyacinth blockage of ports, fish landing sites, and other sensitive areas. Before accepting its use as a pilot, the Bank considered technical issues and consulted experienced scientists, practitioners and experts. The GEF employed its own review process. Based on this, Management concluded that the method held sufficient promise to justify the pilot.
110. Regarding the environmental concerns, the Response explained that the water hyacinth shredding pilot was, in itself, essentially the core of a detailed evaluation of the environmental impact of the shredding methodology. Management claimed it was necessary to do this rather than doing a detailed Environmental Analysis as part of Project preparation because of the absence of sufficient baseline data, and data describing analogous activities in other

similar environments. For this reason, Management contended that there was virtually no chance of preparing a meaningful and useful Environmental Analysis. The largest component of the LVEMP was designed to collect sufficient water quality and limnology data from the Lake to create a reasonable scientific baseline, which would enable environmental assessment of development and management actions in the future.

111. Management did not consider it surprising that Reconcile and the other groups had submitted the Request for Inspection. Management stated that the Government, many NGOs and individuals were under the misunderstanding that the pilot project (for the mechanical shredder) was in itself intended as a solution to the water hyacinth problem in Lake Victoria. Management accepted responsibility for this misunderstanding and acknowledged that a more thorough job of informing the public of the trial nature of the shredding tender could have been made. Additional steps were underway to improve public involvement. Therefore, while Management did not agree with the Requesters' allegations, they understood and sympathized with their frustrations.
112. For the above reasons, Management believed that the design and execution of the water hyacinth chopping/shredding pilot was completely acceptable, and that the Bank had complied with all relevant policies and procedures.

### **2.3. Eligibility of Request**

113. The Panel reviewed the evidence submitted by the Requesters and Management. During a field visit between February 7-13, 2000, Panel Members (Edward S. Ayensu, Leader, and Maartje van Putten) met with officials of RECONCILE and other NGOs in Nairobi. They also met with Government and Bank officials and a number of the Lake's community-based associations in Kisumu, including fishermen and fishmongers.
114. On March 6, 2000, the Panel submitted its Report on the eligibility of the Requesters and the Request and its recommendation on the Request for Inspection. It concluded that the Requesters were eligible and that Request met all of the technical eligibility criteria contained in paragraph 9 of the 1999 Clarifications.<sup>9</sup> It also concluded that the Request and the Management Response contained conflicting assertions and interpretations about the issues, the underlying assumptions, the facts, compliance with Bank policies and procedures and harm. The Panel therefore recommended an investigation into the matters alleged in the Request.

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<sup>9</sup> The 1999 Clarifications to the Resolution that established the Panel are contained in the "*Conclusions of the Board's Second Review of the Inspection Panel*" dated April 20, 1999.

## **2.4. The Board's Decision**

115. On March 20, 2000, the Executive Directors recorded, on a non-objection basis, their approval of the recommendation contained in paragraph 25 of the memorandum from the Chairman of the Inspection Panel entitled "Request for Inspection- Kenya: Lake Victoria Environmental Management Project (IDA Credit 2907-KE) (GEF TF 23819)-Panel Report and Recommendation," INSP/R2000-3. The Board thus authorized the Panel to conduct an investigation into the matters alleged in the Request.

## **2.5. The Investigation Process**

116. The Team which undertook the field visit for the investigation comprised two Panel members, Edward S. Ayensu (Leader) and his colleague Jim MacNeill (Panel Chair). They were assisted by Antonia M. Macedo, Assistant Executive Secretary, and Professor Richard Fuggle, a Senior Consultant from the University of Cape Town.
117. The Panel consulted with the Alternate Executive Director for Kenya, Mr. Girmai Abraham, before and after its field visits to Kenya. The Team interviewed Bank staff associated with the Project in Washington D.C. both before and after the inspection.
118. During a field visit to Nairobi between July 24 and August 5, 2000, Panel Members met with The Honourable Mr. Richard Leaky, Head of Public Service and Secretary to the Cabinet and Dr. Mohammed Isahakia Permanent Secretary, Ministry of Natural Resources. The Team met with the Hon. P. Anyang' Nyong'o, MP; Prof. Thomas R. Odhiambo, Hon President, African Academy of Sciences; Professor Francis M. Muthuri Member, International Panel of Scientists; Professor Duke Orata, Chairman, Water Hyacinth Monitoring Committee; Mr. Chris Kiribu, Chairman, Kenya Manufacturers Association; Prof. Joseph B. Ojiambo, LVEMP Project Co-ordinator, as well as other members of the LVEMP staff, and RECONCILE represented by Steve G. Orino.
119. The Panel Members interviewed Mr. Goran Engstrand and Mr. Per Karlsson of SIDA in Nairobi, and it held meetings with Bank Country Director, Mr. Harold Wackman, and his staff at the World Bank office in Nairobi.
120. In Kisumu, the Team met with Mr. Peter Raburu, Provincial Commissioner, Nyanza Province; Agnes Yobterick, LVEMP Kisumu Manager, and Dr. G. Ochiel, Task Co-ordinator; the Requesters: Executive Chairman of ECOVIC Regional Office and OSIENALA Executive Director, Obiero Ong'ang'a as well as with a number of other officers and members of OSIENALA and ECOVIC Chairperson, Kenya Chapter, Mary Atieno Amwata. NGOs represented at a

meeting with the Panel included UHAI Lake Forum, LAVIRECHA, KICK, Clean-Up Kisumu as well as the Co-ordinator for the NGO Network, Western Kenya and a Lakeside community representative. The Team met directly affected people in a number of village communities along the Lake including Kusa, Rakwaro, Sangorota (where there is a community weevil rearing unit), Dunga, Kaloka and Otiwa.

121. The Team visited and met staff at the water hyacinth mechanical control site, the Kibos Weevil Rearing Center run by Kenya Agriculture Research Institute and the Monitoring Laboratory at Kisumu.
122. In the course of the investigation, the Panel had the opportunity of studying various documents made available to it by Bank staff, Government officials and Non-Governmental Organizations.

## **2.6 State of Water Hyacinth Infestation during Panel's Visit**

123. The water hyacinth shredding and release into the lake started late December 1999 and stopped during April 2000. During its first visit to the Nyanza Gulf area of the Lake in February 2000, the Panel observed a vast expanse of water hyacinth mat, which extended from the shore as far as the eye could see.



Water Hyacinth mat on Nyanza Gulf site in February 2000

124. During its second visit in July-August, 2000, the mat had virtually disappeared not only from the site of mechanical shredding, but also far beyond it. The reasons for this were a matter of considerable discussion and opinions varied widely. Some attributed it to high water levels and record wind and wave action linked to the El Nino phenomenon. Some attributed it to the biological control



program which was in progress at the time. Some attributed it to a combination of the above and other factors. The question remains marked by uncertainty.

125. Just before the Panel's second visit, the Kenyan Project Management declared victory over the water hyacinth. Sober second thoughts, however, soon prevailed.



Picture from the same site where Water Hyacinth has virtually disappeared in July 2000



Panel Team Member discussing with Kenya LVEMP scientists the recurrence in July 2000 of water hyacinth in parts of Nyanza Gulf.

126. The fact that it was premature to declare victory was soon confirmed by the Panel. During its visit to parts of the Lake, the Panel discovered patches of floating (and flowering) mats along the banks and elsewhere. It was further confirmed in November, when the Panel received reports that large parts of the Lakeshore around the Nyanza Gulf were again covered by heavy mats of water hyacinth and secondary growth.



Dense concentration of Water Hyacinth and secondary growth along the lakeshore of Kisumu in November 2000

127. The advance-retreat-advance of the water hyacinth observed in the past year confirms, in the Panel's view, the importance of the water hyacinth component of the LVEMP Project to the well-being of the Nyanza Gulf region and, perhaps, beyond. It also underlines, in the Panel's view, the importance of ensuring that this component of the Project is implemented as intended and in accordance with applicable Bank policies.
128. From the literature on water hyacinth it seems clear that water hyacinth seeds can remain dormant for 15 years and sprout unexpectedly under the appropriate conditions. If so, the residents of the Lake Victoria basin will have to remain ever vigilant and constantly ready to meet the threat as and when it recurs.

## **Part Two**

# **Environmental Compliance**

## Chapter 3

### Categorization of the Project

129. OD 4.01 on Environmental Assessment requires an environmental classification for every Bank-supported project.<sup>10</sup> Accordingly projects must be assigned a Category 'A', 'B' or 'C'. For Category 'A' projects, a full environmental assessment ("EA") is required. For Category 'B' projects, although a full EA is not required, environmental analysis is. For Category 'C' projects, no EA or environmental analysis is required.
130. As noted in the Management Response, the preparation team undertook a broad-based environmental review as part of the project preparation for the LVEMP.<sup>11</sup> It gave the Project a Category 'B' rating. The rating was cleared by the African Regional Environmental Department in November 1995. The entire Project was also evaluated by the African Regional Environmental Department as part of the Bank's Project preparation.<sup>12</sup>
131. In June, 1996, the Staff Appraisal Report commented as follows: *"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."*<sup>13</sup>
132. **The Panel finds that in assigning the project a Category 'B' for environmental assessment purposes, the Bank was in compliance with OD 4.01.**

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<sup>10</sup> See IBRD/IDA, *Operational Directive 4.01 on Environmental Assessment* (October 1991) [hereinafter OD 4.01] at §§ 4 to 8.

<sup>11</sup> See IDA, *Management Response to Request for Inspection*, submitted to the Inspection Panel (December 20, 1999) [hereinafter "Management Response" or "Response"] at p. 7..

<sup>12</sup> Id. at p. 8.

<sup>13</sup> SAR, *supra* note 1, at § 5.25.

## Chapter 4

### Environmental Analysis

#### 4.1. The LVEMP Environmental Analysis

133. The Introduction to the Environmental Analysis states that “[This] overview attempts to provide a synthesis of key information together with a review of the issues as understood at present. It is intended to present the broad context within which specific components of the LVEMP are prioritized and justified. There are many uncertainties in our understanding of the ecological and socio-economic systems based on Lake Victoria but, while further research and analysis will continue, decisions must be taken for action now on the most urgent problems, many of which are familiar in character from experience elsewhere.”<sup>14</sup>
134. The LVEMP Environmental Analysis is largely descriptive. It provides a general overview of issues and concerns based mainly on literature reviews. It outlines the problem of poverty and the pressure that increasing population was placing on the Lake. It also provides an overview of the socio-economic system, and touches on potential costs and benefits. The bulk of the study deals with biophysical matters – physical setting, fisheries, biodiversity, water quality, water hyacinth, and wetlands.
135. The LVEMP Environmental Analysis recognizes explicitly that further analysis may be needed for some future actions under the Project. Under “Issues of Concern”, it is stated as follows: “The LVEMP is an environmental project in terms of its focus and objectives but it is possible that some of the individual actions or projects under the program could have adverse environmental effects. For this reason, individual projects should be screened for their potential environmental impacts and an appropriate environmental assessment carried out as appropriate.” It then identifies four issues “...as requiring explicit review of the environmental consequences.”<sup>15</sup> These include fisheries management interventions, aquaculture and new species, and pollution control as well as water hyacinth control methods. The nature and extent of any “...explicit review of the environmental consequences” of mechanical and manual water hyacinth control methods is not clear from the text, however. The

<sup>14</sup> “Lake Victoria Environmental Management Program Environment Analysis”[hereinafter “LVEMP Environmental Analysis”] at p. 2.

<sup>15</sup> Id. at p. 28.

discussion is confined to water hyacinth control by means of biological and chemical methods.<sup>16</sup>

136. The Environmental Analysis provides no meaningful environmental analysis or discussion of the potential consequences, positive or negative, of the effects that water hyacinth control interventions may have on the livelihoods of different groups of people, e.g. women dependent upon water hyacinth for crafts, fisheries, subsistence farmers in eroded areas. Some issues raised in stakeholder consultations were recorded in the document, but there was no analysis and little commentary on them. The Panel's inquiries further revealed that the stakeholders were not fully consulted during the scoping of the environmental analysis. There was also no indication that the Environmental Analysis was made available to stakeholders either for discussion or review before and after finalization.

## 4.2. Environmental Analysis for Water Hyacinth Control

137. As noted earlier, the LVEMP Environmental Analysis listed several specific project activities for which further analysis may be required in order to examine their "environmental consequences."<sup>17</sup> Water Hyacinth control was one of these. However, the discussion was confined to possible use of biological and chemical methods for long-term lakewide water hyacinth control. Water Hyacinth control by mechanical means was not mentioned. The context of the discussion further suggested that concern was focussed largely on the long-term risks of the introduction of bio-control agents and the cumulative effects of chemical control interventions.<sup>18</sup>
138. The Government of Uganda assumed responsibility for reviewing and making recommendations on the short-term use of chemical and biological control methods in areas worst affected by water hyacinth. It commissioned the firm Aquatics Unlimited to undertake an Environmental Impact Study with the following Terms of Reference:
- To develop an emergency action plan for the control of water hyacinth on Lake Victoria using integrated manual, mechanical, biological and chemical control measures.

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<sup>16</sup> Id. at pp. 28-30. The "Precautions and mitigation measures" for water hyacinth control methods reads at p. 30: "Whatever short-term measures are adopted to deal with the immediate problems, a careful review of the possible cumulative impacts and long term risks should be carried out before adopting chemical or biological agents for long term lakewide management of the weed under the LVEMP. The review should cover an evaluation of relevant experience in the region and elsewhere, together with any further field testing that may be appropriate, as well as the establishment of protocols for the licensing and application of the agents and for the recording and monitoring of the applications and effects."

<sup>17</sup> Id. at p.28-30

<sup>18</sup> Ibid

- To integrate the emergency action plan into the Lake Victoria Environmental Management Program.
- To develop a long-term Water Hyacinth maintenance program for all water bodies in the East Africa Region.
- To undertake further review of the potential of new biological control insects and pathogens.<sup>19</sup>

139. In June 1997, Aquatics Unlimited released their report entitled “*Draft Environmental Impact Study: Water Hyacinth Control Program, Lake Victoria and Other Waterways.*”<sup>20</sup> Among other things, it provided an action matrix comparison of the alternative methods of control, including the no-action alternative. The assessment of mechanical control was based on removal of the harvested water hyacinth from the water body and its disposal on a dumpsite away from the shoreline. It was not based on the option that was later chosen in Kenya, i.e., shredding, harvesting, and releasing into the water body. The findings of the study were, in essence:

- That taking no action against Water Hyacinth was the worst option.
- That taking no action would have the worst effect on water quality. This would lead to decreasing Dissolved Oxygen (DO) levels and increasing Biochemical Oxygen Demand (BOD) more significantly than would biological, chemical or mechanical control.
- That the worst effect on aquatic and shoreline ecosystems would be to do nothing.
- That doing nothing to reduce the Water Hyacinth infestation would also be the worst case for biodiversity, food supply for riparian communities, access to potable water, irrigation, human health, riparian economies, Lake transportation, and riparian demography.

140. Although the study proposed the adoption of chemical, biological, manual, and mechanical control measures, it recommended that the type of control used in a particular area should reflect the physical characteristics of the area and the associated water uses. “*Features such as navigability of a bay, degree of Water Hyacinth cover, proximity to water intakes, sensitive crops, fishing areas, water temperature and the strength of currents are important in determining the appropriate control method for a particular area of the region.*”<sup>21</sup> No details, models, or decision trees for determining how these factors were to be used to decide on a particular control strategy at a particular location were provided in the study. The usefulness of the document for guiding the appropriate selection of control methods was therefore limited.

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<sup>19</sup> Executive Summary, *Draft Environmental Impact Study: Water Hyacinth Control Program, Lake Victoria and Other Waterways*, Prepared for Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, Uganda. June 1997, by Aquatics Unlimited.

<sup>20</sup> Ibid

<sup>21</sup> Ibid.

### 4.3. Environmental Analysis of Mechanical Shredding Option

141. In alleging that there was no Environmental Impact Assessment, the Requesters were concerned only with the mechanical shredding of water hyacinth and its dumping into the Lake. They stated that “*No Environmental Impact Assessment (EIA) has been done on the likely impact of the method adopted by the Project of the mechanical removal of the water hyacinth, to wit, the shredding and sinking of the weed to the bottom of the Lake.*”<sup>22</sup> They proceeded to list the damage or harm which they believed could result from the sinking of the weed in the Nyanza Gulf waters.<sup>23</sup>



Aquatic plant shredder at work in the Nyanza Gulf where harvesting and dumping is taking place

142. The evidence suggests that mechanical shredding and sinking had not been specifically envisaged and discussed at the time the Project was declared effective in March 1997. The LVEMP Environmental Analysis refers to “*mechanical removal*” and to “*harvesting machines.*”<sup>24</sup> The Staff Appraisal

<sup>22</sup> See RECONCILE (Resources Conflict Institute), *Request for Inspection: LVEMP - Mechanical Removal of Water Hyacinth at the Nyanza Gulf* (28 September 1999) in INSP/R2000-3 (8 March 2000) [hereinafter “Request for Inspection” or “Request”] at §1 (i).

<sup>23</sup> “...the pollution caused by dumping of the weed to the bottom of the lake” could endanger the fresh water fish in the Nyanza Gulf. The decomposition of the weed involves oxygen uptake which will reduce or deplete the concentration of dissolved oxygen in the water. “*Sinking and eventual degradation of the weed will result in an abrupt increase of toxic chemicals in the lake... “The decomposition of the water hyacinth will enhance eutrophication of the lake at the Nyanza Gulf.*” Id. at § 2.

<sup>24</sup> LVEMP Environmental Analysis, *supra* note 13, at p. 14..



Report refers to "**mechanical methods**" implying that there is more than one method, but does not discuss them.<sup>25</sup>

143. Management acknowledges that the Borrower's request for inclusion of the hyacinth shredding work into the LVEMP came during project implementation. Had it been received early enough it presumably could have been considered in the LVEMP Environmental Analysis. The shredding methodology was considered when the political pressure was so intense and the economic damage by water hyacinth infestation to fishing villages so compelling that a supplementary solution to the biological control already underway was sought by the Ministry of Environment and Natural Resources. Management states that: *"Having learned of a chopping machine that had been developed in the USA, the Permanent Secretary of the Ministry and the Head of the Kenya National Secretariat of LVEMP visited the USA in October 1997 to see the machine in action. They were impressed with what they saw and decided to proceed with procurement."*<sup>26</sup> Following an International Competitive Bidding, a tender was awarded for the pilot shredding of 1,500 ha of water hyacinth mats in the Nyanza Gulf of Lake Victoria (as shown approximately on Map 2).
144. After the Bank gave its "no-objection" to the Water Hyacinth Tender, it informed the Borrower: *"At the time of appraisal an environmental analysis of the entire project was carried out, which outlined the problems the project was trying to address, and the potential benefits from proposed measures to be implemented, among them measures to address the water hyacinth infestation. The Bank has given its 'no objection' to the award of a tender in Kenya for addressing water hyacinth problems by mechanical means. This 'no objection' signifies the Bank's view that the method of dealing with the water hyacinth problems is acceptable. Furthermore, under the contract, the contractor will be bound by the environmental laws of Kenya with respect to disposal of materials, and in other matters as specified in the tender documents. In view of the foregoing, we do not require a specific environmental impact assessment of this approach prior to signing the contract."*<sup>27</sup>

#### 4.4. Pilot Status of Mechanical Shredding

145. Management has explained at length that the mechanical shredding is only an experimental or trial pilot and has not been accepted as a definitive control strategy for water hyacinth:
- *"...the Project is piloting a number of different management actions. It has indicated its willingness to support mechanical harvesting/removal in Uganda on a cost-sharing basis with the Uganda Electricity Board (upstream of the*

<sup>25</sup> SAR, *supra* note 1, at § 3.21.

<sup>26</sup> Management Response, *supra* note 104, at pp. 9-10.

<sup>27</sup> Project Files, September 16, 1998.

Owen Falls Dam), the mechanical shredding trial in Kenya and biological control in all three countries.”<sup>28</sup>

- “The tender that is the focus of this allegation is only a pilot of the chopping / shredding process, and as such has the limited objectives of testing physical, economic and environmental sustainability, and the conditions under which the method would be appropriate for use”.<sup>29</sup>
  - “The tender to shred water hyacinth was prepared in keeping with the experimental approach. It is not large enough to cause a significant impact on the ecology of Lake Victoria, but of sufficient size (shredding up to 1500 ha of floating water hyacinth mats) to allow water quality monitoring to pick up changes in surrounding Biochemical Oxygen Demand (BOD), phytoplankton abundance/species composition etc that might be indicative of the impact of this method of control should it have widespread use on the Lake at some point in the future”.<sup>30</sup>
146. In the SAR, two types of activities were distinguished: “pilot zone” activities and “lake-wide” activities.<sup>31</sup> A total of fourteen pilot zones were identified, four of which were in Kenya. The Project would undertake a number of activities in these pilot zones “in an integrated way” designed to reduce water hyacinth to manageable levels, develop groundwater resources, reduce sediment and nutrient flow, regulate industrial effluent, and reduce fecal coliform and municipal nutrient output into the Lake.
147. The conceptualization of mechanical shredding and sinking as a pilot project (although done after project approval of the LVEMP) fits in with this general approach.

#### 4.5. Shredding and Sinking Pilot as “Core” of an EA

148. In its Response, Management poses the question: “Why was it necessary to use the hyacinth shredding tender as the core of a detailed evaluation of the environmental impact of the shredding/chopping method of control, instead of doing a detailed EA as part of project preparation?” In sum, it answers that:
- “In the absence of sufficient baseline data, and data describing analogous activities in other similar environments, there is virtually no chance of preparing a meaningful and useful EA.”<sup>32</sup>
  - “...it would be impossible to do a thorough EA in anything less than 3-5 years or more (the time it would take to collect the minimum amount of baseline data)”.<sup>33</sup>

<sup>28</sup> Management Response, *supra* note 10, at p. 12.

<sup>29</sup> *Id.*, at p. 7.

<sup>30</sup> *Id.* at p. 13.

<sup>31</sup> SAR, *supra* note 1, at § 3.3.

<sup>32</sup> Management Response, *supra* note 104, at p.13..

#### 4.5.1. Availability of Data and Time Required for Testing

149. The Panel asked some Bank staff whether, in their view, there was the need for an environmental analysis prior to undertaking the pilot. They were of the view that a full environmental analysis was not necessary but felt that a preliminary evaluation of the likely consequences of the pilot was essential. One observed that even Category 'A' type environmental assessments had been undertaken in many countries with less than the full relevant baseline data, especially in situations of urgency. The point was not to pretend that data were complete when they weren't, and to ensure that, before taking decisions, decision-makers understood that the data underlying any analysis were incomplete. In particular their attention should be drawn to any risks.
150. Management's detailed discussion of the queries raised about the possible impact of the shredding and sinking itself suggests that lack of baseline information was not so abysmal as to render impossible a "*meaningful and useful*" review of the possible environmental consequences. Consider the following excerpts from Management's Response:

- While Lake Victoria is eutrophic, nitrate levels in its waters would be about 100 times less than the nitrate level established in the United States (a conservative 100 mg/l) to protect consumers against nitrate-related illnesses.<sup>34</sup>
- All available information on the Lake suggests that heavy metals and potentially toxic organics (herbicides/pesticides and the like) are not currently present in Lake Victoria at levels that are of concern.<sup>35</sup>
- For every 1000 kg of water hyacinths shredded no more than 50-kg dry matter would fall to the bottom of the lake. It is likely that even the small amount of nitrogen liberated by the shredding process would be quickly removed from the water column by phytoplankton and other plants.<sup>36</sup>

On the increased likelihood of eutrophication, the Management Response considers the following 2 questions:

- "...i) *will decomposition of shredded water hyacinths occur in a well oxygenated environment relatively free of strong vertical temperature stratification, or ii) will decomposition be in a reducing, anoxic, environment below a strong thermocline? The following facts point to the former (no increase)....*" <sup>37</sup>

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<sup>33</sup>Id. at p. 16.

<sup>34</sup>Id. at p. 22.

<sup>35</sup>Ibid

<sup>36</sup>Id. at p. 23

<sup>37</sup>Ibid.

- *“Remobilization of nutrients from hyacinths killed in the shredding process is likely to be gradual, as the Kenyan portion of the Lake is relatively shallower and relatively well oxygenated.”<sup>38</sup>*
- *“...careful survey of work between 1991 and 1995 along rocky shorelines of Lake Victoria in Tanzanian waters documented the presence of 163 species of haplochromine fish, of which 102 species were previously unknown. These discoveries along the hyacinth free rocky shores indicated that it was unlikely that the hyacinth was playing any significant role in the survival of cichlid fish species.”<sup>39</sup>*

151. A crucial question concerns the fate of the water hyacinth seeds during and after shredding and sinking. The Management Response indicates that this was one of the issues raised with the experts consulted.<sup>40</sup> The opinion was that: *“Regeneration of water hyacinth after shredding is unlikely because the chopping would destroy the flotation devices of the hyacinth.”<sup>41</sup>* The Task Team Leader acknowledged that the seeds would not be destroyed by shredding and would remain viable for many years. He did not think, however, that they would germinate in the unfavorable conditions prevailing at the Lake bottom. The evidence suggests, however, that under conditions of reasonable aeration and light, the seeds would germinate and either float to the surface or (in very shallow waters) get rooted in the bottom mud and grow to the surface to further propagate. Many world experts are of the view that the only viable strategy in water hyacinth control is continual monitoring and surveillance.

#### 4.5.2. Technical Consultations

152. Although the size of the trial pilot is small in relation to the enormous size of Lake Victoria (a point which is emphasized in the Management Response), the shredding operation could have localized impacts at sites near the shores where village communities with large population concentrations are found. While Management did not undertake a *“review of the environmental consequences”* of the shredding pilot (deciding instead to treat it as an environmental assessment in the making), Management did recognize that it was desirable to identify possible environmental hazards and any mitigatory measures that might be required and to assess whether the pilot trial had any chance of success at all. Thus, before deciding to proceed with the shredding, it consulted a formidable group of scientists and practitioners, including recognized experts on the ecology of Lake Victoria and on water hyacinth control.

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<sup>38</sup> Id. at p. 24

<sup>39</sup> Id. at p. 10

<sup>40</sup> Ibid.

<sup>41</sup> Ibid.

153. According to the Management Response, the preparation team approached nine scientists and practitioners (names provided) *“including recognized experts in water hyacinth control and on the ecology of Lake Victoria”*<sup>42</sup> for advice. Also named in the Management Response are five GEF experts, ten technical members of the Project Preparation Team and six internal reviewers. Four environmentally related issues were then considered.<sup>43</sup> However, it appears that the questions put to the experts and reviewers concerned possible environmental hazards for the whole of Lake Victoria. Management’s discussion provides no evidence that the experts and reviewers were questioned about possible environmental risks in the specific area subject to the shredding operation (i.e., the area immediately around Kisumu in the Nyanza Gulf). This is fundamental to note. It raises questions concerning compliance with paragraph 1 of OD 4.01, which states that *“... EA covers project-specific and other environmental impacts in the area of influence of a project.”*
154. Even so, Management concludes this discussion stating: *“Having accepted the views of [these] experienced scientists and practitioners, the Bank supported the mechanical chopping tender, viewing it as a pilot intervention...”*<sup>44</sup>
155. Unfortunately, the Panel was unable to obtain documentary evidence concerning these consultations. The Task Team Manager involved in the matter spoke of “minutes of phone conversations” in his files, which he thought would not be useful as they did not cover everything. A staff member described the procedure as “diligent enquiry”. However, given the importance and scale of the consultation (claimed to have encompassed 24 named scientists and experts) the absence of any official or substantive documentation whatsoever is unfortunate and borders on casualness in decision-making. In sum, there is no official documentary support for the part of the Management Response which concerns the technical consultation process, including the specific issues said to have been discussed, and the outcome of the consultation.
156. The Requesters alleged that they wrote on several occasions to ask the Bank to provide them with a copy of any environmental assessment undertaken with respect to the shredding methodology. Given the fact that the Environmental Analysis undertaken for the LVEMP as a whole predated the decision on the shredding and sinking pilot, it is hardly surprising that the request for a copy of an environmental assessment could not be met. However, there does not appear to be any reason why an appropriate reply and explanation, such as was given to the Borrower on September 16, 1998, could not have been given to the Requesters.<sup>45</sup>

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<sup>42</sup> Id. at p. 11.

<sup>43</sup> Id. at p. 10.

<sup>44</sup> Id, at p. 12.

<sup>45</sup> See supra at §60 and note 27.

## 4.6. Consultations with Affected Groups and NGOs

### 4.6.1. The Requesters' Allegations

157. Paragraph 19 of OD 4.01 sets out requirements for consultations as follows: *"The Bank expects the borrowers to take the views of affected groups and local NGOs fully into account in project design and implementation and in particular the preparation of EAs. This process is important in order to understand both the nature and extent of any social or environmental impact and the acceptability of proposed mitigatory measures, particularly to affected groups. Consultations do not reduce the decision authority of the borrower, but are a valuable way to improve decision making to obtain feedback on the EA process and draft report and to increase community cooperation in implementing the recommendations of the EA."*

158. Paragraph 20 of OD 4.01 specifies that *"such consultations should occur at least at the following two stages of EA process (a) shortly after the EA category has been assigned, and (b) once a draft EA has been prepared."*

159. The Requesters claimed that the introduction of mechanical shredding and sinking methodology did not involve local communities or other stakeholders in its design or implementation:

- *"Serious concerns raised by the communities around the lake, ...as well as other informed persons about the likely ecological impact of shredding and sinking the water hyacinth to the bottom of the lake have not been answered sufficiently or at all."*
- *"Little or no regard has been had to the sustainable management of the water hyacinth in using this method of mechanical removal as it does not involve the local communities in its design or implementation."*
- *"The stated participatory approaches and stakeholder involvement in the design and management of the project have been totally ignored as the Project proceeds with this method of removal of the water hyacinth in the face of and without any regard to the concerns and objections of the affected communities..."<sup>46</sup>*

### 4.6.2. Management's Response to Requesters' Allegations

160. In its Response, Management observes that: *"Although Government project management has made an effort to introduce transparency into the Project, it could have done a more thorough job of informing the public of the purpose of the shredding tender."* In this connection, Management went on to state that the

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<sup>46</sup> Request for Inspection, *supra* note 21, § 1 (iii)-(v).

LVEMP and scientific staff had not been sufficiently proactive in explaining the objectives of the LVEMP in general, and this tender specifically, and that this was an indication of weakness in this aspect of Project implementation. Accordingly, Management concluded that the complaints made by the Requesters were understandable but “*not correct in substance.*”

161. Management points out that, first, a broad-based environmental review was done for the LVEMP as a whole and this became a public document. Secondly, it adds, “*the tender that is the focus of the allegation is only a pilot of the chopping/shredding process, and as such has the limited objectives of testing physical, economic and environmental sustainability and the conditions under which the method would be appropriate for use.*” Although “*significant progress had been made with public involvement, ownership and easy accessibility to the Project, we have some distance to go.*”<sup>47</sup>

#### 4.6.3. The Teleconference of 13<sup>th</sup> August 1999

162. From the evidence available to the Panel, including the Management Response, it appears that local groups or NGOs were not properly consulted, as required under OD 4.01, concerning the decision to go ahead and ask for bids for mechanical shredding in November 1997. Nor were they consulted about the design work, if any, that led to that decision.

163. Funding of mechanical harvesting was not included in the IDA Credit/GEF Grant documents. The design of the mechanical shredding pilot began when the borrower concluded that immediate action was needed to clear hyacinth infestation and called for Bids in November 1997.<sup>48</sup> On July 21, 1998, the Bank gave its “no objection” to the award of “*a tender for addressing water hyacinth problems by mechanical means.*”<sup>49</sup> In June 1999, the Project Managers issued a “Priority Action Plan” indicating that it would now (nineteen months after the Invitation for Bids (IFB), and eleven months after the Bank’s “no-objection,”):

- *“Determine in consultation with contractor and stakeholders areas requiring mechanical harvesting...,”*
- *Take part in monitoring of the on-going mechanical harvesting exercise in collaboration with other relevant institutions, stakeholders and Government and Non-Government Agencies...*
- *Determine in consultation with other relevant institutions, stakeholders and Government and Non-Government Agencies whether and how mechanically harvested water hyacinth could be utilized...*<sup>50</sup>

<sup>47</sup> Management Response, *supra* note 10, at p.7.

<sup>48</sup> Ministry of Environment and Natural Resources. “*Invitation for Bids (IFB)*”, 7 November 1997.

<sup>49</sup> Project Files.

<sup>50</sup> “*Priority Action Plan*” at § 4.4.1.

164. The first attempt at formal consultation was undertaken by the Bank on August 13, 1999. It hosted a teleconference at the World Bank office in Nairobi for various stakeholders including NGOs, interested scientists and politicians, some of the Project's scientific and management staff, the shredding contractor, local Bank staff and Management as well as the Task team in Washington. The purpose of the teleconference, as recorded in the minutes, was *"to listen to concerns expressed by various stakeholders on the environmental, economic and social impact of the mechanical shredding and chopping of water hyacinth to Lake Victoria."* By this time an article had appeared on July 25, 1999 in the "Sunday Nation" titled *"Hyacinth Removal: Disaster in the Making."*

#### 4.6.4. The Role of Non-Governmental Organizations

165. From the evidence, it appears that the Bank did not request the involvement of local NGOs that were previously associated with the Project in the decision to approve the shredding tender. This is surprising. The SAR states that: *"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 of the lake and its basin."*<sup>51</sup> The records indicate that the Friends of Lake Victoria (OSIENALA) had been closely involved in the preparation of LVEMP. They had also been responsible for running a workshop on strategies for community involvement in the implementation of the LVEMP. This workshop, held in February 1997, before implementation commenced, was sponsored by UNDP and supported (as well as attended) by the Bank as well as IUCN and UNEP. Thus OSIENALA's interest and commitment to LVEMP was well known and recognized. They had made their concerns about mechanical harvesting known to the Bank in April 1998 and complained about the information flow to NGOs and the public.

#### 4.6.5. Misunderstandings about Mechanical Shredding

166. In its Response, Management stated that *"There is a general misunderstanding on both the side of the Government and those making this allegation regarding the true nature of the Water Hyacinth Shredding Tender. Both the Government and many NGO and individuals believe that the tender is itself a solution to the water hyacinth problem in Lake Victoria. In fact the water hyacinth problem shredding is a pilot..."*<sup>52</sup>

167. Management admits not being *"sufficiently proactive in explaining the purpose of the water hyacinth tender."*<sup>53</sup> The Panel finds it difficult to understand how the

<sup>51</sup> SAR, *supra* note 1, at § 4.35.

<sup>52</sup> Management Response, *supra* note 10, at p. 7.

<sup>53</sup> *Ibid.*



Borrower, as Management alleges, could have misunderstood the objective of the tender and believed that shredding and sinking was a lakewide solution to water hyacinth control. It was the Borrower that initiated the shredding and sinking operation. And it seems evident that the Bank agreed to finance the operation only as one of the trial pilots, and one not to be applied lakewide unless subsequently found to be environmentally, socially and economically feasible. The Panel finds it disturbing that the Bank did not ensure that the Borrower and local stakeholders possessed a full understanding of the purpose and scope of the operation.

#### 4.7. The Panel's Findings

168. Prior to granting a “no-objection” to the shredding tender, Management recognized the need for consultation at least with “...recognized experts in water hyacinth control...” In doing so, however, Management appears to have focussed on questions concerning possible environmental hazards for the lake as a whole, and neglected questions about possible risks in the specific area subject to the shredding operation, the approximate location of which is shown in the shaded area near Kisumu on Map 2.
169. **In the Panel's view, some consultations should have been undertaken not only with experts but also with potentially affected people, as required in paragraph 19 of OD 4.01.** Indeed, involving them in the design of the shredding pilot could have avoided a lot of unnecessary misunderstanding. And it may also have had a positive influence on the design and implementation of the pilot project.
170. Management maintains that, in the “absence of sufficient baseline data, and data describing analogous activities in other similar environments...,” there was virtually no chance of preparing “review of the environmental consequences” of the shredding operation prior to the tender. While this may be questioned, the Panel finds acceptable the approach taken by Management; i.e., viewing the pilot as an environmental-assessment-in-the-making, and putting in place a monitoring system to provide the environmental and other data needed to subsequently determine whether the method is sustainable and would be appropriate for more general use. Unfortunately however, as shown in this Chapter and further demonstrated in the next, both the design and implementation of the shredding pilot's monitoring program was a failure. **Thus, Management is left with a situation in which there was no prior review of the environmental consequences of the method and the environmental and other data needed for a subsequent assessment of the method have not been obtained. This appears to contradict OD 4.01 concerning the “purpose and nature of EA,” including “to improve decision making and to ensure that the project options under consideration are environmentally sound and sustainable.”**<sup>54</sup>

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<sup>54</sup> OD 4.01, paragraph 2.

**171. In view of the above, the Panel has no other choice but to conclude that the Bank is not in full compliance with OD 4.01.**

## **Part Three**

# **Project Supervision**

## Chapter 5

### Monitoring of Shredding Program

172. Noting that “Project Supervision is one of the Bank’s most important activities,” OD 13.05 states that *“Its main purposes are: (a) to ensure that the borrower implements the project with due diligence to achieve the agreed development objectives and in conformity with the loan agreement; (b) to identify problems promptly as they arise during implementation and help the borrower resolve them, and to modify as necessary the project concept and design as the project evolves during implementation or as circumstances change (in this context, Bank supervision complements the borrower’s implementation efforts and is one of the most effective ways in which the Bank provides technical assistance to its borrowers); (c) to take timely action to cancel a project if its continuation is no longer justified, particularly if it can no longer be expected to achieve the desired development objectives; to use the experience gained to improve the design of future projects, sector and country strategies, and policies;....”* It then goes on to outline *“...the Bank’s normal policies, procedures, and responsibilities for supervising projects it finances.”*<sup>55</sup>
173. Paragraphs 42 through 47 of OD 13.05 provide the basic requirements necessary for establishing and conducting sound supervision planning. Among such requirements, it requires a supervision plan to include *“...(c) aspects of the project that require special Bank attention during supervision (e.g., environmental concerns, impact on the poor); and (d) the borrower’s contribution to supervision, including (i) expected participation in supervision missions; (ii) monitoring efforts; (iii) measures for establishing or improving data collection systems; and (iv) data and reports, and timing of their submission to the Bank.”*<sup>56</sup>
174. The issues raised in Request for Inspection led the Panel to examine the adequacy of the supervision process. The Management Response points out, for example, that the water hyacinth shredding operation was a pilot to test *“physical, economic and environmental sustainability and the conditions under which the method be appropriate for use.”*<sup>57</sup> The Panel accepts this. However, it is forced

<sup>55</sup> It should be noted that OD 13.05 is not the exclusive repository of Bank guidance on supervision of Bank projects. For instance, OD 4.01 (Environmental Assessment), Annex D, paragraph 13, states that *“EA recommendations provide the basis for supervising the environmental aspects of the project during implementation. Compliance with environmental commitments, the status of mitigatory measures, and the findings of monitoring programs are part of borrower reporting requirements and project supervision. [...]”*

<sup>56</sup> OD 13.05, paragraph 44.

<sup>57</sup> Management Response, supra note 10 at p. 7.

to question whether there could be a useful environmental analysis of the shredding pilot under the conditions described below.

## 5.1. Structure of Monitoring Program

175. As stated above, Management has explained that the mechanical shredding tender is an experimental or trial pilot of the shredding process. Accordingly, the pilot's objectives are limited to testing the physical, economic and environmental sustainability of the method and the conditions under which the method would be appropriate for more general use. Management felt that the tender was not large enough to cause a significant impact on the ecology of the Lake Victoria. In shredding up to 1,500 hectares of floating hyacinth mats, however, it was of sufficient size to allow water quality monitoring to pick up changes in surrounding waters. Changes in Biochemical Oxygen Demand (BOD), phytoplankton abundance, species composition, and conductivity etc. might be indicative of the impact of this method of control. Monitoring the cost of shredding operations over a stipulated 12-month period would also enable a more accurate economic assessment to be made should it be considered for more widespread use in the Lake at some point in the future.<sup>58</sup>

176. A Water Quality and Ecosystem Management Component has been in place since the beginning of the Project, long before the Request was submitted to the Panel.<sup>59</sup> In Kenya it is implemented by the Ministry of Water Resources in collaboration with, inter alia, 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.<sup>60</sup> Management points out, however, that OSIENALA and other groups did alert the Task Team to the fact that the activities of the monitoring groups lacked transparency and the involvement of the broader Kenyan scientific community. As agreed at the teleconference called by the Bank on August 13 1999, a Water Hyacinth Control Monitoring Committee (WHCMC) was set up to include impartial scientific advisors.<sup>61</sup>

177. Thus the monitoring program now has two parts. *"The first part is the scientific water quality monitoring program within and around the area in which the hyacinth shredding will be undertaken. This part is the responsibility of government scientists. The second tier of the management program is an independent group of scientists that will review the design and implementation of*

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<sup>58</sup> Id. at p. 15.

<sup>59</sup> The program has the purpose of ensuring "...that the shredding pilot results in data useful to interpreting potential environmental impact of the method on Lake water quality..." Id. at p. 14.

<sup>60</sup> SAR, supra note 1, at § 3.27.

<sup>61</sup> It was proposed that "joint monitoring and supervision of the [mechanical shredding] contract be conducted by an independent technical review panel in addition to and independent from the project monitoring team. This team would participate fully in field supervision and technical review of monitoring data." (See World Bank. *Minutes of Teleconference of August 13, 1999*, included as Appendix 1 to the Management Response to Request for Inspection.)

*the monitoring program to insure its impartiality and scientific rigor. The area to be monitored by this impartial group of scientists, with the assistance of the ministries responsible for managing water quality of the Lake, is restricted to the 1500 ha, which is only a small part of the area affected by hyacinths within the Kenyan part of Lake Victoria."*<sup>62</sup> According to Management, *"The purpose of the new monitoring program is to ensure that the shredding pilot results in data that will help interpret potential environmental impact of the method on Lake water quality. It also has the objective of making the monitoring program and its results transparent to the outside community of scientists and stakeholders."*<sup>63</sup>

## 5.2. First-hand observations in the field

178. The Water Hyacinth Control Monitoring Committee (WHCMC) outlined a program for scientific and environmental monitoring of the Kenya portion of Lake Victoria in relation to water hyacinth control. It not only took into account all relevant factors but also exhibited commendable sophistication.<sup>64</sup> Information obtained during the Panel's field visit, however, suggests that the program has been disregarded in its execution and appears not to have been extended to the mechanical shredding pilot.
179. The Panel's Inspection Team visited the Kisumu laboratory on 28 July 2000. It found that little, if any, progress had been made in providing the basic scientific infrastructure that was essential to enable the monitoring to achieve its objectives. The Panel witnessed first-hand the dilapidated state of the building housing the laboratory as well as the completely unsatisfactory state of the laboratory. The laboratory had inadequate equipment, glassware, reagents, water supply, electricity supply and cleaning service. Any results emanating from it would be highly suspect.
180. Since the water analyses required for the pilot shredding project could not be undertaken locally, the water samples had to be sent to Nairobi for analysis. The baseline samples taken before shredding commenced had been analyzed in the Chemistry Department of the University of Nairobi.<sup>65</sup> Samples taken *after completion of the shredding* (no samples having been taken while the shredding process was in progress) were analyzed in the Water Quality Laboratory of the City of Nairobi.
181. The Kisumu laboratory manager told the Inspection Panel Team that transport delays in moving samples from Kisumu to Nairobi meant that three days elapsed between sample collection and analysis in Nairobi. The technical staff recognized that this rendered the analyses of Dissolved Oxygen (DO) and

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<sup>62</sup> Management Response, supra note 10 at p. 15.

<sup>63</sup> Ibid.

<sup>64</sup> Project Files, September 20, 1999 .

<sup>65</sup> Information provided to the Inspection Panel by Professor Orata, Chair of the Monitoring Committee of the Water Hyacinth shredding pilot study during interview in Kisumu on 28 July 2000.

Biochemical Oxygen Demand (BOD) suspect, if not completely invalid. The consequential fact that invalid analyses undermined the rationale for the entire pilot shredding project did not appear to be as readily appreciated.

### **5.3. Experimental Design for Monitoring the Shredding Pilot**

182. The Panel Team's inquiries relating to the scientific design of the sampling frame for monitoring the effects of the Water Hyacinth shredding pilot revealed a complete lack of attention to experimental design. According to information provided to the Panel, the water samples taken both before and after shredding were taken at Lake shore locations selected to be the sites of weevil rearing. All samples were taken in one-liter glass containers from surface waters some 10 meters from the shoreline. Samples were not replicated and no samples were drawn further away from the shoreline or at different depths. This lack of samples from the bulk of the water body was serious. The Panel Team was also told that it was a direct consequence of the monitoring staff not having been provided with either access boats or with the equipment essential for taking samples at various depths in the Lake.
183. The Chair of the WHCMC (and another member of the monitoring team present for the discussion) informed the Panel Team that no concurrent monitoring of fish catches, aquatic or shoreline biodiversity, or reactions of riparian communities had been undertaken to establish the potential impacts of the shredding. He expressed the hope that such information might be available from other components of LVEMP, but he didn't know.
184. The Panel Team was also informed that program's lack of analytical capacity was mainly responsible for the fact that no monitoring was undertaken of confounding factors. Most notably, as the Panel Team later saw, the quality of discharge from the Kisumu sewage works was not being monitored. Yet, these data would be needed to establish whether changes to water quality in Kisumu Bay was the result of shredding or other factors. The need for samples from control locations (as well as the need for meteorological and limnological data) to interpret the results of the shredding process, did not appear to be appreciated by the Bank staff and members of the Monitoring Group with whom the Panel Team interacted. The seriousness of this situation for the credibility and usefulness of the water hyacinth pilot cannot be overstressed. Without adequate research design, sampling, analysis, recording, and inter-comparison, the water hyacinth pilot cannot be construed as a "controlled experiment" or any other form of scientific enquiry.
185. With respect to the "economic experiment", also associated with the pilot, the Panel Team was unable to obtain any coherent data on the costs of water hyacinth shredding. Nor was any explanation provided as to how this important element of the experimental pilot was to be addressed so that its potential for more general use could be assessed. Such lack of data relating to an expressed

objective of the shredding pilot cannot help but raise questions concerning the claim that the water hyacinth shredding tender is part of an experiment to gather data to assess the conditions under which the method would be appropriate for more general use.

186. In summary, the Panel's observations lead reluctantly to the conclusion that there has been a serious lack of attention to the scientific underpinnings of the water hyacinth shredding pilot. An adequate water sampling and analysis program was not put in place. A before-shredding baseline was not established. No samples were collected during the shredding operation. The laboratory and other required scientific infrastructure was not, and is not yet, in place. Much relevant data on related factors have simply not been collected and that which has is largely inadequate, inappropriate, or useless. Data with which to compare shredding and other forms of control are simply inadequate. Thus, from the perspective of research and experimental design, as well as the adequacy of equipment and facilities to undertake appropriate sampling and monitoring, the Water Hyacinth shredding pilot, at this point in time, must be deemed a failure.

#### **5.4. Preparedness of Pilot for Monitoring**

187. The Task Team Leader (TTL) was asked about the preparedness of the pilot with regard to arrangements for monitoring. He explained that, given the doubts expressed by local critics concerning the reliability of data from the Project Monitoring Team, an independent WHCMC was established following the teleconference of August 13, 1999. The WHCMC was to design the monitoring program and could request funds required for its work. It had produced its first report which was largely a literature review.

188. The Task Team Leader agreed, however, that, in the absence of a rehabilitated and properly equipped Water Quality Monitoring Laboratory at Kisumu, the monitoring could not be undertaken effectively. He was nevertheless of the view that the analysis of water samples could meanwhile be undertaken in a well-equipped laboratory at Entebbe in Uganda. However, his attention was drawn to the need for ensuring freshness of samples to achieve reliability of results. He also expressed the view that getting all the analyses done in one laboratory was preferable because of problems of inter-laboratory quality control. The Panel found this questionable since inter-laboratory quality control was an essential element in the design of LVEMP. He agreed that, due to lack of vehicles, the scientists in the field would not be able to undertake their programs effectively. The Panel drew attention to the fact that the Bank had financed a fleet of brand new four-wheel drive vehicles as well as fax machines and photocopiers. The Task Team Leader was of the view, however, that the ready purchase of vehicles and fax machines for use by the Secretariat while field staff and scientists were starved of funds was in part due to the mode of Bank payment to suppliers of these items.



189. The Task Team Leader was asked about the funding of the 7-member high-level Panel of internationally renowned scientists which the Project agreed to appoint to serve as the overall advisory group for the scientific studies on the Lake. He confirmed the Panel's finding that no funding had been approved under the Project to enable the international group to function.

### **5.5. The Panel's Findings**

190. **In the Panel's view, given the weakness of the research and experimental design and the inadequacy of the facilities and equipment required to undertake appropriate sampling and monitoring, the Water Hyacinth shredding pilot must be deemed a failure.**
191. **The Panel feels that procurement and disbursement practices which result in the relatively easy purchase of vehicles and office equipment, while laboratories, field and scientific staff essential to meeting the objectives of the pilot are starved of funds, need urgently to be corrected as part of proper supervision of the Project.**

## Chapter 6

### Supervision Missions

192. Between June 1998 and June 2000, the Bank undertook two Supervision Missions and one Mid-Term Review Mission for the Kenyan component of LVEMP. The Panel has examined the resulting reports and aide-memoires and it has discussed them with some of the key staff involved.

#### 6.1. The First Supervision Mission (June 1998)

193. The First Supervision Mission Team of June 1998 appears to have been acutely aware of the need for the requisite scientific infrastructure to be in place and for scientific staff to be effectively organized to enable effective monitoring of all aspects of the LVEMP. The Mission's Aide Memoire refers to the need for the rehabilitation and proper functioning of the Water Quality Laboratory in Kisumu as follows:

- “The regional Water Quality Laboratory in Kisumu will be essential for the LVEMP Water Quality Projects and other affiliated LVEMP projects to meet their objectives and it must be made operational as soon as possible.”
- “The Water Quality components of the project have staff in the field at Kisumu, but they have been starved of funds, and unable to do any useful work. It is of serious concern that these critically important parts of the project have scarcely begun their work, and of great urgency that they do so.”<sup>66</sup>

194. The Mission's Aide Memoire then proceeds to detail 14 specific actions that need to be taken as a matter of urgency. Several related to the specific needs for monitoring the water hyacinth shredding operation, which was to come later. These included:<sup>67</sup>

- Let contract for rehabilitation of the building block in Kisumu. (*“...it is estimated the laboratory could be available within three months if the procurement proceeds without complication”*);
- *“identify immediately the manager for the new laboratory....”*

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<sup>66</sup> 1998 Aide Memoire at p. 6.

<sup>67</sup> Id. at pp. 6-8.

- “initiate laboratory equipment procurement ...with priority assistance ...from the Secretariat...”
- “train technical staff in appropriate techniques ...for the Kisumu laboratory... in anticipation of receiving the required equipment...”
- “prepare a detailed and exact “methods manual” for the Kisumu Laboratory; this should be done by the Laboratory Manager and staff and will require ...acquiring similar laboratory manuals from national and international laboratories for use as guides...”
- “...emergency procurement of a suitable computer to house the chemicals database of the laboratory....”

195. The Mission’s Aide Memoire attributes the non-performance of the technical program for water quality monitoring and other components of the Kenya part of LVEMP in considerable part to procurement and disbursement delays. The opening paragraph reads as follows: *“The project has made very slow progress in most areas. Procurement in particular has fallen far behind a reasonable schedule and disbursements have been extremely slow. These are matters of grave concern, in view of the fact that the project has been effective for more than a year. Funds are not flowing to implementing groups in Kisumu and elsewhere in the Lake catchment ... The implementing agencies need to take immediate action to establish Standing Imprests with their task co-coordinators in the field to accelerate the flow of funds, and of project implementation.”*<sup>68</sup>

196. The Aide Memoire further observes that *“The procurement delays have adversely affected progress of the entire project, because implementing agencies are citing shortages of vehicles and other equipment as reason why they are unable to proceed with project implementation.”*<sup>69</sup> And, later in the text, it proceeds to itemize some procurement matters which need attention.<sup>70</sup>

## 6.2. The 1999 Mid-Term Review Mission

197. In 1996 the three Governments and IDA agreed that a Mid Term Review (MTR) would be carried out before the end of March 1999.<sup>71</sup> In November 1998, five months after the June 1998 Supervision Mission, the TTL visited each country to discuss the focus, process and schedule of the MTR.<sup>72</sup> The TTL visited again in early 1999. Shortly after these visits, the Bank’s Project Status Report for Kenya

<sup>68</sup> Id. at p. 1.

<sup>69</sup> Ibid.

<sup>70</sup> Id. at p. 6.

<sup>71</sup> SAR, supra note 1, at § 3.27.6.2 (n).

<sup>72</sup> See 1999 Aide Memoire at §§4-6.

stated that the mid-term review will, at the request of the Government, focus on reorganization of the Project.<sup>73</sup> In the event, the MTR focussed on both the supervision of ongoing Project activities in Kenya and a review of the proposed activities to be accomplished under the Project over the next 2.5 year, until its closure in the last quarter of 2002.<sup>74</sup>

198. The MTR's draft Aide Memoire was completed on June 16, 1999 and was submitted to the Government in final form on January 20, 2000. It is to be read in conjunction with the Progress Report for the Period July 1997 to April 1999 and Priority Action Plans of the LVEMP for the Period from July 1999-June 2002, both prepared and assembled by the Project Secretariat.<sup>75</sup> These reports were cited by the MTR Mission as *"an invaluable base from which the Project scientists and administrators, and the Mission, derived the final version of the workplan presented in this Aide Memoire."*<sup>76</sup>
199. The tone of the MTR's Aide Memoire in respect of the water quality monitoring project does not seem to reflect the sense of urgency felt and conveyed by that of the First 1998 Mission. It expresses modest, if any, concern that many of the actions insisted on by the 1998 Mission, and which concern the water hyacinth component, had not been taken. It reports that a contract has been awarded for the construction of the water quality monitoring laboratory in Kisumu but *"there appears to be some minor delay in a final contract being signed..."* It asks the National Secretariat *"to meet with the contractor to see if anything can be done to shorten the period before he mobilizes the site."* It observes that *"it is likely that laboratory equipment will arrive in Kisumu before construction of the new laboratory is finished,"* and asks that *"that space be found in the existing Water Department to set up and commission the equipment as soon as it arrives..."*<sup>77</sup> It notes that some staff undertook training, as recommended by the 1998 Mission.
200. The MTR's Aide Memoire refers to *"minor progress"* being made in Kenya despite the fact that *"2.5 years have passed."* It goes on to assert optimistically, however, that *"... the project is now ready for full scale implementation of its technical program."*<sup>78</sup> It notes that *"...a new system of disbursements is expected to be in place by the next supervision mission..."* That is, in approximately twelve months. However (as it turned out), this would be too late to ensure that the scientific and other equipment required for the monitoring program was in place

<sup>73</sup> The *Project Status Report* gave the Kenya component of the project an unsatisfactory rating for *Project Development Objective*, and a similar rating for *Implementation Progress*. *Project Management* was upgraded from unsatisfactory to satisfactory, as was *Procurement*. The rating for *Monitoring and Evaluation* remained unsatisfactory and the *Water Management* remained highly unsatisfactory (i.e. the very lowest).

<sup>74</sup> 1999 Aide Memoire at § 2.

<sup>75</sup> Discussed in the Aide Memoire are *"only those activities and deliverables that are different from those presented in the Priority Action Plan"* Id, at §13.

<sup>76</sup> Id. at §6.

<sup>77</sup> Id. at §§ 40 and 42

<sup>78</sup> Id. at .§ 4.

before the shredding pilot commenced. In fact, it would have had to be in place some time before the pilot commenced in order to ensure that proper baselines were established.

201. The MTR's Aide Memoire was drafted between June 7-18, 1999, but the final version "incorporating all recommended changes made by the Government of Kenya" was prepared in December 1999. A copy was transmitted to the Permanent Secretary of the Ministry of Natural Resources on January 20, 2000, seven clear months after the completion of the Mission. In the transmittal letter issued from the Nairobi World Bank office it is asserted with confidence that "*The LVEMP is entering a new and exciting phase. Most of the equipment and rehabilitation works are now in place and components have begun implementation of the individual activities with renewed energy.*" (Emphasis added). The letter ends by extending "*congratulations on a job well done to your LVEMP implementation team.*"<sup>79</sup>
202. Although the MTR's Aide Memoire incorporates by reference all the activities yet to be performed with regard to the water hyacinth shredding pilot, the Panel finds it difficult to understand why the tone of the Aide Memoire changed in comparison with that of the previous year. It appears unperturbed by the fact that some "critically important parts" of the Water Quality component in Kisumu, to which urgent attention had been drawn by the 1998 Mission, were still not in place after one whole year had elapsed.<sup>80</sup> One of the purposes of the Mid-Term Review was to supervise ongoing Project activities.<sup>81</sup> The Aide Memoire also refers to the need "*to promote community participation activities in all LVEMP components,*" but in describing the "*specific areas*" where project funds may be used to facilitate these activities, it fails to even refer to the shredding pilot.<sup>82</sup> The need to reorganize the Project along the lines indicated by the TTL, however, does not explain why the language of the 1999 MTR Aide Memoire distanced itself so markedly from the 1998 Mission Aide Memoire.
203. By December 1999, it had become evident in Washington that the implementation of LVEMP in Kenya was proceeding at an extremely slow pace, as indicated by disbursements. Yet, the MTR Aide Memoire, now dated January 2000, contained the statements referred to in paragraph 112 above. In mid-February 2000, a special financial mission confirmed this.<sup>83</sup> On February 2, an email was sent on to the Kenya Government indicating "the likelihood of canceling at least US\$7 million from the IDA Credit and GEF Grant".<sup>84</sup> In mid-March, an announcement was sent to Nairobi concerning the 2000 Supervision

<sup>79</sup> Project Files, January 20, 2000..

<sup>80</sup> Progress in these activities was required to provide any scientific meaning to the pilot.

<sup>81</sup> 1999 Aide Memoire at § 2.

<sup>82</sup> Id. at §§69-70.

<sup>83</sup> February 14-18, 2000 Financial Management, Accounting and Statement of Expenditure Review Mission

<sup>84</sup> Supervision Mission Draft Aide Memoire, June 16, 2000 at §5.

Mission and indicating that that the Mission would address the continued poor performance of the Project as indicated by disbursements.

### 6.3. The Second Supervision Mission (June 2000)

204. It was not until the next regular (June 2000) Supervision Mission (after the Request had been received) that serious concern was expressed once again within the text of an Aide Memoire about the poor performance of the Project. The Aide Memoire chronicles a long list of unresolved problems relating to water quality monitoring, among others, that were supposed to have been addressed as a result of the 1998 Mission and as priority activities under the Mid-Term Review a year earlier. The following extracts from the Mission report are illustrative:<sup>85</sup>

- “...the program has yet to make substantial progress in terms of providing critical data and information on the water quality of the Lake...”
- “It is absolutely essential that equipment and laboratory supplies which have been in customs storage since October 1999 be cleared and brought to Kisumu. These outstanding procurement issues should be resolved by the Secretariat by June 30, 2000”.
- “The highest priority activity of this laboratory is to have the full list of essential analyses operational by September 30, 2000”.
- “The Secretariat should ensure the completion of the Lab block by 30<sup>th</sup> September at the latest. The component must also initiate procurement of essential furniture, fittings (sinks, fume cupboard, ventilation etc.) and furnishing (counters) for the completion of the lab. The completion of the new laboratory by December 2000 is priority for the Secretariat.”

205. Evidence available on the circumstances surrounding the 2000 Supervision Mission indicates that it did not proceed as originally planned. Instead of reviewing a vision document prepared by the component (in connection with the restructuring of the LVEMP initiated by the new Task Team Leader), as had been previously planned, the Mission was “*forced to abandon*” this in order to determine “*which of the many problems besetting this Project lay in the critical path of the Project implementation.*” (Emphasis in original). Accordingly, the Mission undertook to: (a) address the problems of cash flow in the LVEMP; (b) assess the finance channels supporting project components; (c) identify the problems in the existing system and propose solutions to the cash flow problem; (d) examine the role of the Project Secretariat.<sup>86</sup>

<sup>85</sup> See 2000 Aide Memoire at pp. 20-21.

<sup>86</sup> Id. at .§ 6.

## 6.4. Reorganization of LVEMP

206. The Panel asked the Task Team Leader about the apparent lack of follow up of the 1998 Mission report in the 1999 MTR Mission Aide Memoire. He explained that the Mission's primary concern was to reorganize the Project in view of its poor performance. The Government and scientists alike were under the impression that the Project would be concluded in five years. There was no long-term view or long-term commitment. The Project had to be reorganized by placing it in a longer-term context. This involved expanding the limited horizon for the Project into a 10-15 year vision and commitment. It also involved (i) identifying all the problems, (ii) prioritizing them and (iii) undertaking pilot-level activities so as to know what would work and what would not work for the guidance of the follow-on activities after the five-year period.

207. A member of the 1999 MTR Mission told the Panel that the Kenyan Government had to accept that it was no longer possible for the Project to be fully implemented within the two and a half years of time left, and it had to agree to reorganize the Project. Once it had agreed, it had to be given time to see whether it would implement the refocused program. Within that context, the MTR Mission could not maintain the tough line taken by the 1998 report.

## 6.5. The Role of the Project Secretariat

208. The 1999 Mid-Term Review Mission appears to have been entranced by "an excellent" Progress Report (July 1997 - April 1999) and Priority Action Plan (July 1999-June 2002) assembled by the Project Secretariat. It explicitly asserted that *"the Kenya National Secretariat was functioning well and no major changes in its composition or funding are needed."*<sup>87</sup> (Emphasis added).

209. The 1999 Aide Memoire points out that *"One cautionary note needs to be made. It appears that Secretariat spending is significantly ahead of where it should be at this point in the Project. This is understandable, particularly given that the high cost of the water hyacinth harvesting/chopping tender is covered by the Secretariat budget and given all the unforeseen problems that the Secretariat has had to resolve."*<sup>88</sup> The 2000 Supervision Mission, on the other hand, made the following comments about the Project Secretariat:

- *"To date, about 25% of the total amount available to the Project has been disbursed. Expenses of the Project Secretariat accounts for over 40% of this total. The rate of expenditures by the Secretariat has not changed over the last*

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<sup>87</sup> 1999 Aide Memoire at § 7.

<sup>88</sup> Ibid 7.



*fiscal year, and it is still spending at a rate twice that expected at the beginning of the Project."*<sup>89</sup>

- *" It is clear from disbursement figures that most of the 25% expenditure have been for goods and works."*<sup>90</sup>
- *"The Secretariat needs to become much more proactive in its administrative role... There are a number of procurement packages that are only partially procured and delivered. One package (vital laboratory equipment) has been stuck at Nairobi airport for almost 10 months and it is essential that this equipment be cleared and operated before expiration of the warrantee period to ensure that all are operational..."*
- *The Secretariat must push harder for the information it needs to procure."*<sup>91</sup>

210. Despite the optimism expressed by the Mid-Term Review Mission, the June 2000 Mission reported that *"the Bank/GEF Task Team has been carefully watching disbursement patterns of the Project, as an indicator of improved and more active implementation."* It notes there was little, if any, improvement in implementation of the LVEMP. *"With 60% of the Project implementation time gone, only a quarter of the Project funds have been expended and most of this for goods and works. Extraordinarily little of the recurrent budget (operational funds) has been channeled to the various Project components."*<sup>92</sup>

## 6.6. The Panel's Findings

211. **Procurement and disbursement delays were a major factor in the poor implementation of the LVEMP Water quality-monitoring program, as Management has found. In the Panel's view, however, this was compounded when a whole year was lost in ensuring that corrective action was taken. The expressions of optimism and confidence on the status of the Kenya portion of the Project contained in the 1999 Aide Memoire, and in the transmittal letter, could, and in the Panel's view, did mislead Project Management and lull it into complacency.**
212. **On the basis of the foregoing, the Panel finds that Management failed to comply with paragraph 42 of OD.13.05 because supervision of the design and data collection systems for the pilot was inadequate and because supervision of the implementation of the monitoring systems was also inadequate.**

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<sup>89</sup> 2000 Aide Memoire at § 21.

<sup>90</sup> Ibid..

<sup>91</sup> Id. at §22.

<sup>92</sup> Id. at § 4.

## **Part Four**

# **Poverty Reduction and Economic Evaluation**

## Chapter 7

### POVERTY REDUCTION IMPACT OF MECHANICAL SHREDDING

213. The Request raises questions concerning OD 4.15 on Poverty Reduction. It points out that shoreline communities “*depend directly on the Lake for their livelihoods, feeding on and trading in its freshwater fish species and using its water for domestic purposes.*”<sup>93</sup> The mechanical shredding and sinking of water hyacinth, it maintains, will result in ecological and environmental degradation of Lake Victoria in the Nyanza Gulf and this in turn will impact adversely on “*the livelihoods and well-being*” of these communities.
214. If this allegation were to be substantiated, it would constitute a violation of OD 4.15, which places emphasis on: (a) *efficient income earning opportunities for the poor, and (b) improved access to education, health care and other social services to improve welfare directly.*<sup>94</sup> In the case of women “*on whom poverty falls disproportionately*” emphasis is placed on an increase in their income-earning opportunities, food security and access to social services.<sup>95</sup>



Community members explaining to Panel member how the Water Hyacinth project is affecting their livelihoods

<sup>93</sup> Request for Inspection, supra note 21, § 2

<sup>94</sup> OD 4.15, §3.

<sup>95</sup> OD 4.15, .§ 6

## 7.1. Mechanical Shredding and Poverty Reduction

215. In support of their allegations, the Requesters maintain that the polluting effects of shredding and sinking would have adverse effects on lakeshore livelihoods and wellbeing. In this regard, they state that the pollution caused by the sinking of the shredded hyacinth would harm the freshwater fish and degrade water for domestic use. They maintain that the reduction or depletion of the concentration of dissolved oxygen in the water by the decaying water hyacinth will endanger the lives of fish species that have little tolerance of dissolved oxygen. They assert that water hyacinth can accumulate heavy metals, phenols and toxic substances which will be released into the Lake and pollute its waters making it unsafe for domestic use. And they allege that water hyacinth decomposition will enhance eutrophication and cause nitrates levels to rise. The latter, they say, will increase the likelihood of babies below 5 years of age developing the Blue Baby Syndrome.

216. In its Response, Management maintains that it is the water hyacinth infestation itself that is a major environmental and economic calamity and “*a major contributor to poverty*” in and around the Lake.<sup>96</sup> Removal of the water hyacinth will eliminate this poverty-inducing factor.

217. During Project preparation, the spread of water hyacinth mats was shown to have major detrimental effects on the economy of the Region.<sup>97</sup> According to Management, these include a reduction of fish in the Lake through de-oxygenation of water, increased turbidity, and reduction of nutrients in sheltered bays which are breeding and nursery grounds for fish, particularly, tilapia. The presence of water hyacinth mats resulted in physical interference with fishing operations, especially in the bays where fish are brought ashore to piers or landing beaches. They also resulted in physical interference with access to water supply from the Lake for both urban and rural communities. The water hyacinth mats also provided a preferred breeding habitat for an alternate host for schistosomiasis (bilharzia), namely the *Biomphalaria* snail, a home for the vector mosquito for malaria, and a haven for snakes.

218. Using newspaper and technical reports, Management provides copious illustrations of how the above effects find expression in the lives of people living around the Lake in the three riparian countries. The following are examples:<sup>98</sup>

- Water hyacinth brought Kisumu port activity to a standstill, leaving rail goods stranded. A World Food Program consignment destined for

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<sup>96</sup> Management Response, supra note 10, at p. 21.

<sup>97</sup> Id. at p.26.

<sup>98</sup> Id. at pp.18-19.

Rwanda was reported to have been held up for a week. (United Nations Department of Humanitarian Affairs, 1997).<sup>99</sup>

- The inability to gain access to some landing sites caused fish to be brought to boat landings in poor condition and to be rejected by fish buyers. Fishermen took longer to land and used more fuel per catch of fish. (Aquatics Unlimited EIA Study, 1998).<sup>100</sup>
- The lifestyles of traditional communities that depend on the Lake are crumbling. In Kenya, the normally sedentary Luo fishermen were turning nomadic. (World paper Online, 1997).<sup>101</sup>
- A ship could not dock because the pier at one end of the Lake port on the Kenyan side had been sealed off by weed. (Earth Times News Service, (1997).<sup>102</sup>
- At Port Bell more that 1000 liters of fuel was used for a wagon to break through the weed. (Aquatics Unlimited 1997).<sup>103</sup>
- Five Kenyan village women who went to the Lake to draw water for home use could not and were bitten by snakes (Earth Times News Service, 1997).<sup>104</sup>

219. In the Panel's view, following its field visits, there can be little doubt that the heavy infestation of water hyacinth is a serious threat to the livelihoods and welfare of lakeshore communities and contributes to poverty. Doing nothing about such infestation is the least preferred option unless it can be demonstrated that an intervention could cause significant social, environmental or economic impacts.

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<sup>99</sup> Id. at p.21.

<sup>100</sup> Id at p. 20.

<sup>101</sup> Id. at p.19.

<sup>102</sup> Ibid.

<sup>103</sup> Id. at pp.20-21

<sup>104</sup> Id. at p.19.

## THE PANEL'S OBSERVATIONS AT DUNGA BEACH

At Dunga Beach, near Kisumu, local fishermen spoke with a member of the Panel Team as they were preparing to set sail for the evening's fishing. Conversation was with the "net owner" who hires the boat from the "boat owner" who, frequently, is not a resident of the local community. The net owner also hires four fishermen who actually go out on the Lake fishing. Thus at least six persons and their families benefit from, and four or five are dependent upon, each fishing boat.

The boats sailing from Dunga Beach were fishing for *dagaa*, small fish some two to three centimeters long. These fish are sun dried and sold per bucket. An average night's fishing yields 8 to 10 buckets of small sun-dried fish. A good night is when more than 12 buckets are caught. The fish are sold to buyers at the beach for about 300 Kenya shillings a bucket. A night's fishing thus yields an income of about 3000 Kenya shillings. The four crew of the boat are paid about 250 shillings and given a "food allowance" of 50 shillings for each night's labor. So some 1200 Kenya shillings goes to the crew. The monthly boat hire is close to 10000 shillings (or 500 shillings per night, assuming 20 fishing days per month). The balance of 1300 shillings per night is the income of the net owner. However, the boat crew is on a basic wage and must be paid regardless of the fish caught. The boat owner must also be paid regardless of fish caught. So on days that few fish are caught or when no fishing is possible the net owner assumes the "risk" and he may be out of pocket.

With Water Hyacinth infestation fishing boats were frequently unable to get through the Hyacinth mats to go fishing. This completely disrupted the local village economy as the net owner did not hire crew for the boats and was unable to pay for boat hire. Many nets set close to the Water Hyacinth mats were destroyed if the mats moved across them, and many boats were also swamped and destroyed. As the investment in a net is some 40,000 shillings and in a boat some 10,000 to 20,000 shillings the Water Hyacinth effectively wiped out the capital investment of many net and boat owners. The hardship was particularly severe on net owners who often had no other means of livelihood.

The net owner and the crew with whom the Panel Team spoke stressed that the "cutting machine" had done an excellent job of removing the Water Hyacinth and allowing them to resume fishing. In their opinion, they had not been affected negatively by the shredding and had seen no change in the numbers or types of fish caught. In sum, they appeared satisfied with the shredding and hoped the machine would stay at Kisumu to clear away any further occurrences of the waterweed.

## **7.2. The Panel's Findings**

- 220. The Panel is satisfied that: (i) heavy water hyacinth infestation is a major threat to the livelihoods and wellbeing of Lakeshore communities and a significant contributor to poverty; (ii) the scientific arguments against possible polluting effects of decaying shredded water hyacinth appear convincing.**
- 221. In the Panel's view, the social and economic benefits of the water hyacinth control program have been significant and have been to the advantage of the overwhelming majority of Lakeshore dwellers. There is no evidence to suggest that this is not true of the mechanical harvesting component. At the same time, the Panel witnessed some apparent harm to small numbers of people engaged in the nascent water hyacinth utilization industry. The Panel is satisfied, however, that this harm is not the outcome of the Bank's failure to comply with its policies and procedures. Accordingly, the Panel finds that the Bank is in compliance with OD 4.15.**

## Chapter 8

# ECONOMIC EVALUATION IMPACT OF MECHANICAL SHREDDING

### 8.1. Water Hyacinth Control Methods: Alternatives and Costs

222. The Request raises the issue of alternatives for water hyacinth control and management. This is relevant because OP 10.04 on Economic Evaluation of Investment Operations states that *“Consideration of alternatives is one of the most important features of proper project analysis throughout the project cycle. To ensure that the project maximizes expected net present value, subject to financial, institutional, and other constraints, the Bank and the borrower should explore alternative, mutually, exclusive designs.”*

223. An examination of the Request does not reveal anything which challenges the economic justifiability of the mechanical shredding tender. In a letter addressed to the Project Coordinator on July 26, 1999, however, which was copied to the Inspection Panel, among others, the Executive Director of RECONCILE proposes that *“alternative methods of disposal of the weed be looked into.”*<sup>105</sup>

224. In a letter dated September 7, 1999, OSIENALA proposed that *“economic utilization of water hyacinth should be promoted.”*<sup>106</sup> This implies removal and use outside the Lake instead of shredding and sinking. Later, on 23 September 1999, ECOVIC advocated manual removal.<sup>107</sup> Earlier, during the August 13 teleconference, Prof T. Odhiambo, President of the African Academy of Science, expressed the opinion that *“removal options had not been fully explored”* while the representative of RECONCILE asked for *“an analysis of dumping on shore versus chopping and dropping.”*<sup>108</sup>

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<sup>105</sup> Letter addressed by the Executive Director of RECONCILE to the Project Coordinator on 26<sup>th</sup> July, 1999. Letter attached to the Request for Inspection. The issue is addressed in the Management Response (Section 2.2. page 2.)

<sup>106</sup> Letter from OSIENALA, dated 7 September 1999 attached to the Request for Inspection. The issue is addressed in the Management Response (Section 2.2. page 2).

<sup>107</sup> A letter dated 23 September 1999 from the Kenya Chapter of ECOVIC attached to the Request for Inspection.

<sup>108</sup> Recorded in the minutes of the teleconference held on August 13, 1999. Attached as Appendix One to the Management Response.



225. In its Response, Management discussed the question of alternative methods of water hyacinth control. The preparation team had estimated the costs of the various control methods currently being used in the riparian countries to control the weed as follows:<sup>109</sup>

- Mechanical removal - \$ 3000/ha
- Shredding and sinking - \$1000/ha
- Chemical control - \$100 - \$ 300/ha
- Biological Control - \$ 30 - \$ 50/ha.

226. The three Governments have taken the position that herbicides would not be used in Lake Victoria.

227. Biological control, the cheapest of the control methods, is being pursued in the Kenyan portion of the Lake. It is also being used in Uganda and Tanzania and, according to Management, has achieved some success in the former. In those parts of the Kenya portion of the Lake where releases of weevils have taken place, there have been reports of significant reduction in infestation of the weed, thus attesting to the effectiveness of this form of biological control. Management believes that only biological control holds significant prospects for long-term, large-scale management of water hyacinth.<sup>110</sup>

228. It takes time to implement biological control methods, however, and, as shown by the Kenya example, hyacinth infestation can meanwhile take a heavy toll on the economic life of the communities around the infestation areas, especially fish landing beaches, water supply and power intakes, ports and ferry. A rapid emergency response strategy is thus necessary and, as explained by Management, that can best be provided by mechanical harvesting.

229. Mechanical harvesting, followed by removal and dumping outside the Lake, involves much more than shredding and sinking. After harvesting, the weed must be transported to an offloading facility on shore. This requires not only the offloading facility but also perhaps roads and other infrastructure. The trucks needed to transport the wet and decaying water hyacinth to the disposal site add to the cost.<sup>111</sup>

230. The estimated \$3000/ha for mechanical harvesting followed by removal and dumping on shore is based on actual experience in Uganda while the estimated \$1000/ha reflects the process of international competitive bidding for the shredding tender in Kenya.

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<sup>109</sup> Management Response, supra note 10 at p.24.

<sup>110</sup> Id. at p. 21.

<sup>111</sup> Id. at p.23.

231. Mechanical harvesting followed by removal and dumping on shore appears to have been the initial choice.<sup>112</sup> Indeed, in a public relations document put out by the Project Management Secretariat on harvesting, removal and dumping on land was the stated choice.<sup>113</sup> Although shredding and sinking became the preferred option, the question appears to have remained open, since more reliable cost estimates of shredding operations were to be obtained from active monitoring of the shredding pilot.<sup>114</sup>
232. Manual removal is also an option. It is feasible, however, only close to the shoreline and, given the size of the Nyanza Gulf and the extent of the hyacinth infestation, the potential for manual removal is insignificant in relation to the magnitude of the problem. The hazards of bilharzia, malaria and snakes also make it an unattractive option. According to Management, Project funds were used for manual removal, but only in a limited way and at selected sites, particularly fish landings. Funds were used to purchase wheelbarrows, hand tools, and protective gear.<sup>115</sup> The Bank no longer supports using Project funds to pay local community members to manually remove the hyacinth.

## 8.2. Sustainability of Mechanical Shredding

233. Sustainability is an essential element in OP 10.04 which states that: *“To obtain a reasonable assurance that the Project’s benefits will be sustained throughout the life of the project, the Bank assesses whether critical private and institutional stakeholders have or will have the incentives to implement the project successfully.”*<sup>116</sup>
234. In opting for shredding and sinking, the Request maintains that *“little or no regard has been had to the sustainable management of the water hyacinth in using this method of mechanical removal ...”*<sup>117</sup>
235. Management does not fully address the issue of how mechanical shredding or sinking would constitute a sustainable method of control. This is an important question because of the high cost. Management does observe that:

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<sup>112</sup> The IFB of November 7, 1997 referred to "mechanically shredding/chopping" and that the "hyacinth should be shredded/chopped into pieces averaging in the range of 7.5-15cm..." but does not specify whether it is to sink into the lake or be disposed of.

<sup>113</sup> See LVEMP Kenya National Secretariat, *Bulletin Issue No. 1*, February 1999.

<sup>114</sup> However, the "Description of the Works" at 1.1 and Appendix A (4) in the Contract between Aquarius and the GoK (20 May 1999) for the mechanical shredding requires that some of the shredded water hyacinth be move to land: *"The shredded/chopped pieces of the water hyacinth within five hundred (500) meters from the shoreline of Lake Victoria must be removed and deposited on land in areas designated by the Employer [Ministry of Natural Resources]."*

<sup>115</sup> Management Response, supra note 10, at p.26.

<sup>116</sup> OP 10.04, §5.

<sup>117</sup> Request for Inspection, supra note 22, at §1 (iv).

(a) *The preparation team also investigated the cost of the various control technologies.*<sup>118</sup>; and

(b) methods of hyacinth control which can be applied with immediate results “*tend to be high cost mechanical methods, including chopping/shredding.*” (Emphasis added.)

236. In fact, the first “Progress Report” of the LVEMP National Secretariat noted that harvesters are very expensive (US\$800,000 to \$1.5 million each) and that the Kenya Government had approached friendly countries to assist in the purchase of harvesters.

237. It is not clear who might bear the cost of sustaining a mechanical harvesting option. Management is of the view that if the shredding method works, “*it would be a tool that could be used and funded by local groups and organizations to open landing beaches, clear paths to ferry and cargo terminals so ships could dock and open access to the Lake for fishermen to get their fishing sites easily and quickly*”<sup>119</sup> (Emphasis added). It is not stated who the local groups and organization are and how they will be mobilized to fund this high-cost operation on a sustainable basis. It seems most unlikely that this could be managed by the fisherfolk and village communities around the Lake.

238. Cost may not be an obstacle to sustaining a mechanical harvesting operation in certain cases. A large utility such as an Electricity Board (in the case of Uganda) or the Government itself, with possible support from donor agencies, could manage it. In any case, there is no evidence that mechanical harvesting would not be sustainable for specific high priority strategic locations, within a broader program of Lake-wide biological control.

### **8.3. Economic Utilization and Harm or Potential Harm**

239. As noted above, the Requesters proposed that “economic utilization of water hyacinth control should be promoted.” It would transform a nuisance into a resource, putting it to a wide variety of uses, creating livelihoods and enhancing welfare. If the hyacinth could be removed and utilized, it would also serve to reduce the cost of this method of control.

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<sup>118</sup> Management Response, supra note 10, at p.24. See paragraph 29 above for a description of such costs.

<sup>119</sup> Management Response, supra note 10, at p. 15.

240. The Panel is aware of the extensive literature that has been devoted to the economic utilization of water hyacinth. Worldwide, it is reported that water hyacinth has been used for making mats, ropes, vases, shoe soles, furniture, baskets, floor mats, paper, boards, briquettes and biogas. The plant has been used to prepare animal feedstock for cattle, pigs, rabbits, chicken, sheep and fish. In agriculture, it has been used as compost and mulch.
241. In its Response, Management reported that in November 1996, the Bank supported a proposal financed by a Danish Trust Fund to test the manufacture of biogas in Uganda near the Owen Falls dam from a combination of water hyacinth and sugar cane tops (in an area where there were extensive sugar cane plantations) for experimental use at the Nile Brewers company.<sup>120</sup> Nowhere else in the text, however, does Management elaborate on potential economic utilization.
242. As noted above, however, the shredding contract itself required that the water hyacinth harvested from 500 meters off the shore be deposited on land.<sup>121</sup> It could then be used by the nascent utilization industry, some elements of which the Panel Team visited in and near Kisumu. This included small furniture design and manufacturing enterprises producing baskets, tables, chairs and other furniture, commercial outlets to sell them, and former manual harvesting and trucking operations. The Panel spoke to some of the management and staff involved. While extremely difficult to judge, it seems possible that these fledgling enterprises could well multiply in the course of time in line with experience elsewhere. However, it appears that the program to eradicate (or at least control the spread of) water hyacinth, has rendered these emerging enterprises virtually inoperable.
243. This raises the question of possible harm. In the Panel's view, as noted earlier, the vast majority of people and communities around the Lake have and should continue to benefit enormously from the program to control the spread of water hyacinth. While this must be kept in mind, it is also evident that the program may have resulted in some harm to the as yet small numbers of people engaged in the nascent utilization industry.<sup>122</sup>

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<sup>120</sup> Management Response, supra note 10, at p.26.

<sup>121</sup> See LVEMP Kenya National Secretariat Bulletin, Issue No. 1, February 1999.. The shredding contract (5/20/99) itself required shredded water hyacinth from within 500 meters of the shore to be deposited on land.

<sup>122</sup> There is another small group that may have suffered some harm as a result of the program. During its visit to Sanga Roa, the Panel Team met with fisher women who were using the water hyacinth to shelter their nets. Women were observed setting circles of small mesh nets, two to three meters in diameter, among the floating plants fringing the Lake edge -- the fringe was some 10 meters wide. The plants inside the circle were removed to allow light to penetrate and aeration of the surface water. This procedure attracts small fish, some two to three centimeters in length, which take refuge in the water hyacinth mats in their escape from the predatory Nile perch. Considerable quantities were netted in this manner. These are sun-dried on the shoreline and either sold (about 300 Kshs per bucket) or mixed

244. Is this harm, however small, a necessary consequence of the water hyacinth control program? Two observations and one question.

(i) The water hyacinth is in the Lake to stay, as noted earlier (in section 4.4.1.). It cannot be eliminated or made to disappear permanently, although, with a continuing control program, supported by vigorous monitoring and surveillance, its spread can be managed.

(ii) The amount of hyacinth needed to sustain and grow the nascent utilization industry is minute in comparison with the actual and potential volume of infestation around the Lake. In other words, the scale of the Nyanza Gulf infestation in relation to the amount of water hyacinth that can be practically utilized renders utilization impractical as a method of significantly reducing the infestation.



Fisher women using the Water Hyacinth to shelter their nets

(iii) In a continuing program to manage the spread of the water hyacinth, is it possible to find ways to enable the harvesting and removal of the small quantities needed? If so, the harm could be avoided and, over time, the potential benefits of utilization might be realized. It would seem to be worth another look.

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with maize meal as a staple food. The women harvesting fish in this way reported that the water hyacinth fringing the shore was beneficial to them and that they were worse off when no hyacinth was present close to their villages. This phenomenon is, however, a consequence of the disturbed ecology of the lake due to the introduction of the exotic and carnivorous Nile Perch which preys on the small fish. The water hyacinth provides shelter for the small fish and hence the increased catches among the water hyacinth.

#### **8.4. The Panel's Findings**

245. **The Panel is satisfied that in arriving at the mechanical shredding tender, Management did consider alternatives. With regard to the sustainability of shredding operations, although Management has not provided clear guidelines as to who would bear the cost of future shredding operations, no evidence was available to indicate that the method would in actual fact be unsustainable in view of cost.**
246. **In the light of explanations and analyses provided by Management and upon its own field observations, the Panel concludes that the Bank is in compliance with OP 10.04.**