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MANGOCHI, MALAWI
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(Prepared by the Scientific and Technical Advisory Panel)

Report of the STAP Workshop on Review of the East African Lakes

**Mangochi, Malawi
January 14-15, 2000**

***Prepared by
The Scientific and Technical Advisory Panel (STAP)
of the Global Environment Facility (GEF)***

**STAP Secretariat
United Nations Environment Programme**

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Preface

It is a pleasure to present the final report of the Review of the East African Lakes. The review session was held in January 14-15, 2000 in Mangochi, Malawi. The meeting was convened by the Scientific and Technical Advisory Panel (STAP) of the GEF to review the scientific and technical related issues arising from the implementation of GEF projects in East African Lakes and to explore practical modalities for the management of these lakes, which adequately integrate science as well as knowledge from local national and regional stakeholders.

This report was prepared by Prof. Eric Odada and the STAP Secretariat.

Madhav Gadgil
STAP Chairman

Executive Summary

This report is as a result of the STAP Review of the East African Lakes (Malawi, Tanganyika, and Victoria) convened in Mangochi, Malawi from January 14-15, 2000. The review was undertaken at the request of the GEF Secretariat through its International Waters Task Force (IWTF). The objectives of the meeting were to:

- (i) *Assess the status of GEF projects undertaken in the lakes with the view of identifying the key scientific and technical issues emerging from the implementation processes.*
- (ii) *Explore practical modalities for the management of the East African Lakes, which adequately integrate science, as well as knowledge and the experience of local, national and regional stakeholders.*
- (iii) *Facilitate the establishment of links between local scientists and the GEF initiatives.*
- (iv) *Explore ways and means of integrating relevant scientific data and results into the design and implementation of GEF projects.*

The review meeting provided, for the first time, an opportunity for the riparian countries of the lakes to meet and exchange views, experience approaches on the management of the lakes as well as to examine modalities and approaches for their future management. The meeting also provided a forum for interaction between the International Decade for East African Lakes (IDEAL) scientists and African scientists working on the lakes to explore opportunities for future collaboration and co-ordination of activities.

A number of recommendations and conclusions were made and endorsed by the Panel, the main ones of which were summarised as follows:

- (i) *A programmatic multi-lake basin approach for the East African Lakes is highly desirable given the commonality of issues being faced by the riparian states of the three lakes (i.e. watershed degradation; water hyacinth; blooms of potentially toxic algae; reduction of fisheries; fish kills; increasing sedimentation etc); and the need to share and disseminate monitoring and research results information and experiences on management approaches; scientific information and technologies for addressing various issues. This approach would provide an overall framework within which interventions can be designed nationally, regionally or intra-regionally to ensure complementarity. This would also facilitate a more co-ordinated approach to resource allocation by donor agencies; technology transfer and exchanges of experiences between riparian countries and a framework for building sub-regional capacity as well as ensuring scientific standards for investigations being undertaken on the lakes. Such an approach would also provide a more predictable framework for longer-term private sector involvement and investment.*
- (ii) *In order for the framework to be meaningful, a 7-8 year time span was deemed desirable for a programmatic multi-lake basin approach for the East African Great Lakes as well as the establishment of monitorable indicators to measure success.*

Stated briefly, this would entail:

- *A co-ordinating mechanism, with clearly defined functions and responsibilities is central for supporting a programmatic multi-lake basin approach.*
 - *Synthesis and analysis of available information/data including the results of the GEF projects for integration into policy decisions concerning the lakes' resources. The analyses will also facilitate priority setting, the identification of gaps and the linking of scientific information with national and regional priorities.*
 - *The necessary scientific and monitoring infrastructure to support future interventions in the lakes.*
 - *The establishment of incentive schemes (i.e. East African Lakes Foundation/Endowment Fund) as a means of providing incentives to African scientists to undertake investigation in the East African Lakes.*
- (iii) *The Panel concluded that further consideration of the above ideas by the stakeholders is necessary as it marks paradigm shift in the management of the East African Lakes. Fundamentally, it calls for management based on integrated data systems in which science has an important role to play. As a consequence, it is in the interest of the GEF to invest limited resources in facilitating further dialogue on the programmatic approach by the stakeholders in the East African Great Lakes. Such an activity could possibly be considered within the context of the UNEP/GEF Strategic Partnership.*

SECTION 1: INTRODUCTION AND BACKGROUND

1.1 BACKGROUND

The large lakes of East Africa (Victoria, Tanganyika and Malawi) are unique natural resources that are heavily utilized by their bordering countries for transportation, water supply, fisheries, waste disposal, recreation and tourism. The environmental quality and biodiversity of these large lakes must be preserved. The environmental issues of these large lakes of East Africa have unique factors associated with them that can only be addressed through scientific understanding of their biological, chemical and physical limnology.

The large basin size of these lakes makes them oceanic in some aspects. They have, distinctly, different nearshore and offshore ecosystems, their water circulation is affected by the Earth's rotational effects, their geological processes are oceanic in scale and behaviour, and their chemical gradients within the water column extend over several tens of meters depth.

Recognising the importance of the East African Lakes, the environmental issues being faced by the riparian countries in managing these ecosystems and the need for a better scientific understanding of the biological, physical and chemical properties of these systems and the implications for management and policy; STAP¹ noted, that the wealth of relevant scientific information generated within the framework of the International Decade of East African² (IDEAL) Research was not being utilized by ongoing projects of GEF in East Africa (Victoria, Tanganyika, Malawi). More startling was the revelation that there are few linkages between most of the initiatives on the East African Lakes including between the GEF financed projects in Lakes Victoria, Tanganyika and Malawi (see Figure 1.1). As a follow-up, the GEF Secretariat through its International Waters Task Force (IWTF) requested STAP to take the lead in convening a participative brainstorming involving GEF project task managers; regional/national co-ordinators and scientists working on those projects and IDEAL scientists on how to more effectively integrate science into the East African Lakes projects.

As a response, the Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF) convened, in collaboration with the GEF Secretariat and the Implementing Agencies, a review of the GEF Projects in the East African Lakes (Victoria, Tanganyika and Malawi). The meeting took the form of a participative session with the project task managers, regional and national co-ordinators and scientists working on those projects; the GEF Secretariat and Implementing Agencies and the scientists (national and international) associated with the International Decade of East African Lakes.

¹ The STAP brainstorming on *Freshwater Resources in Sub-Saharan Africa*, and at the *Third Meeting of STAP* held at UNEP headquarters on February 8-9 and February 10-12, 1999 respectively, after reviewing the results already achieved by African scientists, within the framework of the International Decade for East African Lakes (IDEAL) research in East African lakes reached this conclusion. STAP's conclusion was also supported by the conclusion of the GEF International Waters Task Force Meeting held at UNEP Headquarters on 7 February, 1999.

² IDEAL was formed in 1993 and has as its Mission Statement "To contribute to fundamental, integrated understanding of the African Great Lakes, to facilitate the transfer of this knowledge to resolving environmental issues, both scientific and applied, and to build scientific partnerships between international and regional scientists in order to exchange knowledge and to facilitate capacity building in the region.

1.2 PARTICIPATION

The meeting was attended by regional coordinators, national and regional project managers of the GEF financed projects from Burundi, Kenya, Malawi, Tanzania, Democratic Republic of Congo (DRC), Zambia and Uganda; regional and international scientists from the IDEAL network, representatives from the McArthur Foundation and the Government of Norway, the GEF Secretariat and the Implementing Agencies (United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP) and the World Bank).

1.3 STRUCTURE OF THE BRAINSTORMING SESSION

The brainstorming session was structured in a manner so as to facilitate the active participation of the various stakeholders attending the meeting. It comprised of an official opening addressed by the Hon. Minister of Natural Resources and Environment, Government of Malawi; plenary sessions on the role of GEF and the East African Great Lakes as well as the role and involvement of the McArthur Foundation and the Government of Norway Development Agency (NORAD); the status of the GEF financed projects; the state of science with respect to the East African Lakes³ the activities of IDEAL as it relates to the East African Great Lakes and the main conclusions of the Second International IDEAL Symposium⁴ and Working Group Session⁵.

1.4 OFFICIAL OPENING

The meeting was officially opened at 9.00 a.m. by Hon. Harry Thompson, Minister of Natural Resources and Environmental Affairs, Government of Malawi, who reiterated the importance of the lakes to all the riparian countries and their commitment to ensure their sustainable utilization. He challenged the scientists attending the meeting to use science to aid the riparian countries in better management of their fishery resources and the GEF Secretariat and Implementing Agencies to ensure private sector involvement in the management of the lakes as an integral part of any future GEF interventions.

In addition to the Minister, Prof. Eric Odada spoke on behalf of STAP; Dr. Alfred Duda on behalf of the GEF Secretariat and Implementing Agencies; Prof. Thomas Johnson on behalf of IDEAL and Mr. M. Ben Mbewe, Principal Secretary, Ministry of Natural Resources and Environmental Affairs, Government of Malawi.

1.5 AIMS AND OBJECTIVE

³ Three presentations were made by IDEAL scientist to illustrate how science can be used in facilitating better management of the Great Lakes and the resources contained therein. Presentations were made by [Robert Hecky](#), [Pierre-Denis Plisnier](#), and [Graeme Patterson](#).

⁴ The Second International IDEAL Symposium was convened from 10-13 January, 2000 immediately before the East African Lakes Review brainstorming session. This facilitated interaction between IDEAL scientists (regional and international); the project managers, local scientist involved in the GEF project ; the GEF Secretariat, Implementing Agencies and STAP

⁵ The meeting participants were divided in three Working Groups (I) The Role of the Science Community in future interventions in the East African Great Lakes (ii) Modalities for facilitating a Programmatic Multi-Lakes Basin Approach for the Great Lakes of East Africa and (iii) The Role of the Donor Community. Group 3 was made up of representatives from donor community present at the meeting

The aims and objectives of the meeting were outlined by the workshop co-ordinator as:

- (i) To assess the status of the GEF projects being undertaken in lakes Victoria, Tanganyika and Malawi with the view of identifying the key scientific and technical issues emerging from the implementation processes.
- (ii) To explore practical modalities for management of the East African Lakes which adequately integrate science as well as knowledge and the experience of local, national and regional stakeholders.
- (iii) Facilitate the establishment of links between local scientists and the GEF initiatives
- (iv) Explore ways and means of integrating relevant scientific data and results into the design and implementation of GEF projects.

1.6 EAST AFRICAN LAKES AND THE GEF

The overall context for the meeting and the role of the GEF in the East African Lakes was provided in presentations by Prof. Odada and Dr. Alfred Duda. Prof. Odada gave an overview of STAP role and function in the GEF and emphasised the GEF and STAP current emphasis on the mobilisation of the scientific and technical community in GEF work.

In outlining the rationale for the meeting, Prof. Odada made reference to STAP's observation that the wealth of scientific data that has been collected by IDEAL is not being adequately utilised in the ongoing GEF project. He also identified the lack of linkage not only between GEF funded projects, but the numerous activities being funded by various donors in the three lakes. This situation is illustrated in Figure 1.1.

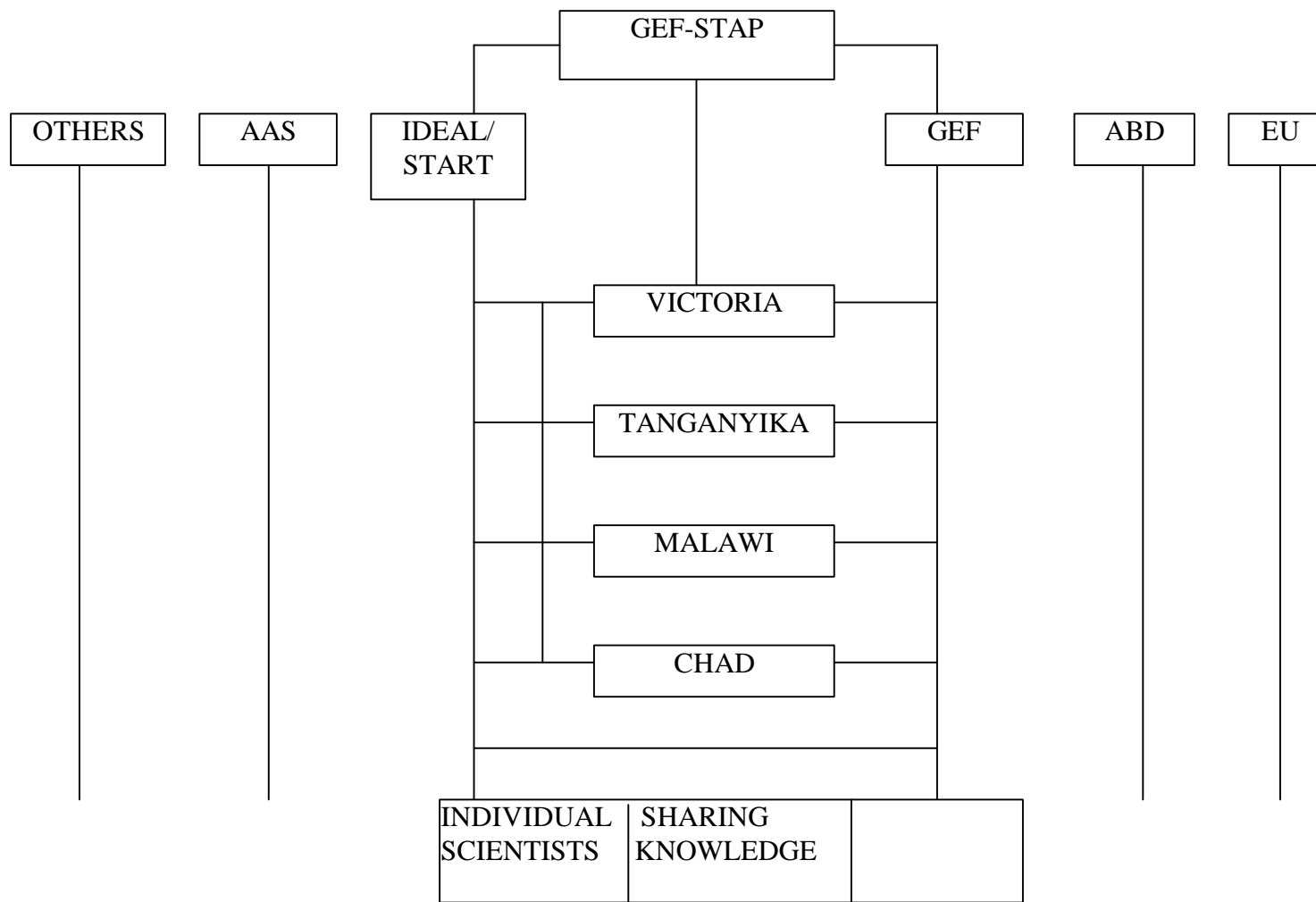


Figure 1.1 Water Related Projects in Sub-Saharan Africa: Need for Closer Collaboration and Better Integration

Figure 1.1: This illustrates the lack of co-ordinating mechanisms between the various initiatives in the East African Great Lakes. Such a situation does not adequately provide a framework for integrating the activities of scientists with those of nation and regional institutions and stakeholders. In addition, there is a significant lack of interlinkages and mechanisms for information dissemination between the various initiatives.

In addressing the expected outcome of the meeting, Prof. Odada challenged the participant to focus on appropriate modalities which could facilitate a more comprehensive and integrated analysis of the East African Great Lakes Systems, as a means of ensuring greater basin wide management. Such modalities he indicated should ensure the integration of science including human dimension research to be an integral part of the overall decision making and management structure of the East African Lakes. Figure 1.2 illustrates, this view and should be considered as the next step beyond the scenario outlined in Figure 1.1.

An example of the integration of a scientific network into the initiations outlined in Figure 1.1. is illustrated in Figure 1.2.

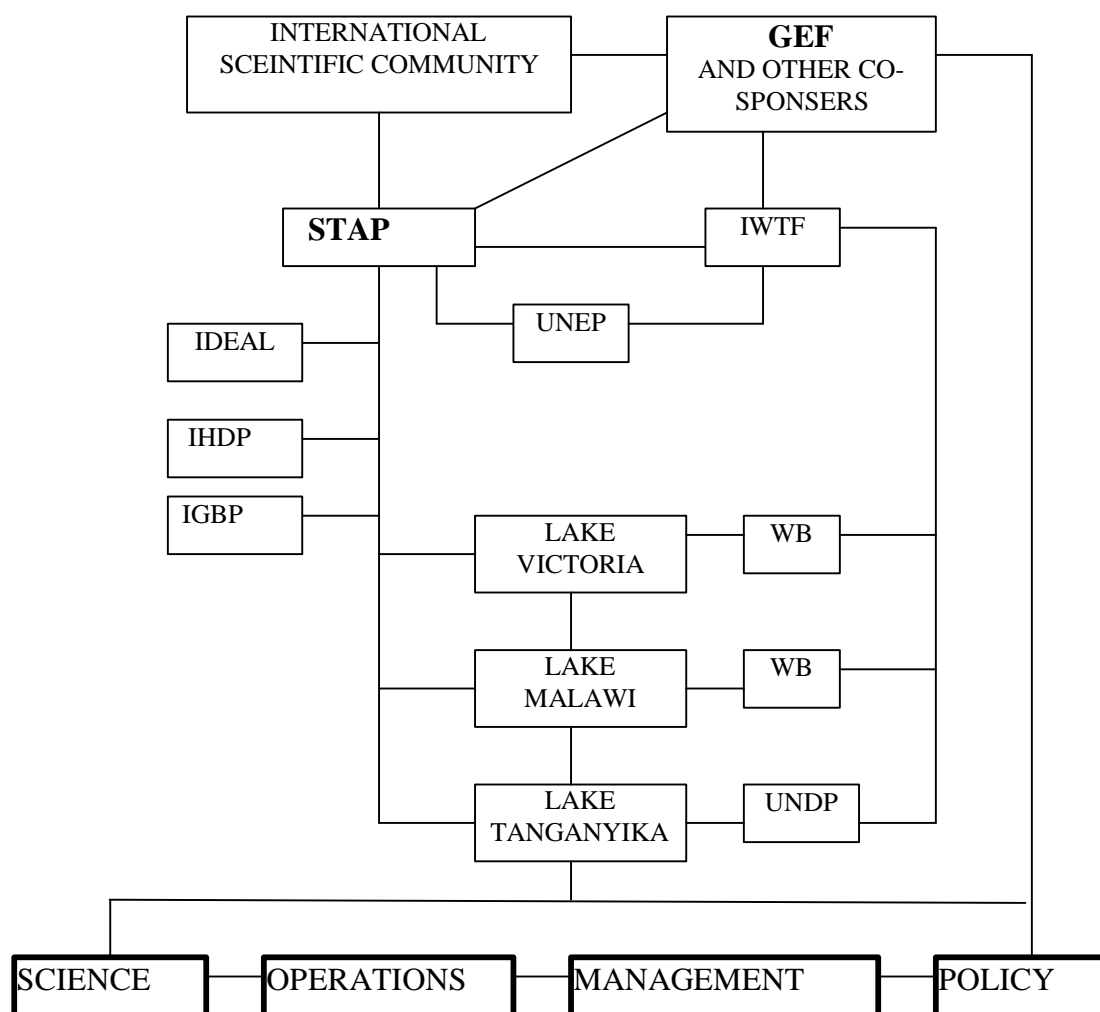


Figure 1.2 Integrating a Scientific Network: An Example

Dr. Alfred Duda of the GEF Secretariat presented a comprehensive overview of the GEF Operational Strategy and Programmes, with particular reference to the International Waters focal area and the international waters projects in the pipeline particularly those for Africa and those which will adopt a programmatic approach. Reference was made to the emerging “programmatic approach” in the international waters focal area. In this regard, the Black Sea Basin Programmatic Approach was suggested as a possible model that countries may wish to follow in focusing on ‘management’ of the catchments and the lakes through multiple lake basin projects.

Furthermore, the use of the processes of the Strategic Action Plan (SAP) and Transboundary Diagnostic Analysis (TDA) as an integral part of this approach were emphasised. These processes it was explained allows participating countries to exchange facts on the environmental status of their resources; facilitate the identification of transboundary priorities and then decide politically the priorities they want to address; are committed to and willing to undertake baseline actions to support the ones being financed by the GEF. This diagnosis then allows the different problems to be broken down into smaller, simpler ones for ease of implementation.

The point was also made quite explicitly, that unlike the GEF pilot phase, GEF does not fund research studies, *per se*, instead GEF resources should be targeted to the areas where countries are ready to act and the problems known. Reference was also made to the GEF Targeted Research window which provides resource for “*goal oriented research that supports the GEF operational strategy by providing information, knowledge and tools that improve the quality and effectiveness of the development and implementation of GEF projects*”

To illustrate the role of science in the management of lakes, references were made to the experiences of Canada and U.S.A. in addressing the environmental issues impacting on those systems. The major lessons highlighted from the Canada/U.S.A. experiences are: the role science played in articulating the issues which were based on sound science, this had the impact of providing the momentum for policy action and the mechanisms (i.e. Science Advisory boards/committees etc.) which were established to ensure that sound science guided the policy responses. To illustrate applicability of this approach in GEF projects, specific reference was made to what is occurring in Lake Chad Basin and Benguela projects where a science advisory body to the Commission and/or Steering Committee is being proposed as occurred in the Great Lakes of North America under the U.S.A./Canada treaty.

SECTION 2: SUMMARY OVERVIEW OF THE STATUS OF THE GEF FINANCED EAST AFRICAN GREAT LAKES PROJECTS

2.1 INTRODUCTION

The basis for the discussion on the GEF financed projects in the East African Great Lakes was provided by presentations by project staff from the three lakes⁶. In reviewing the projects, it was recognised that the projects were designed during the pilot phase of the GEF, before the formulation of GEF Operational Strategy and programmes. Notwithstanding that, the lessons learnt are relevant to current and future GEF projects. The fact that the projects were at slightly different phases of implementation also aided the review process. For example, the Lake Tanganyika which commenced in 1993 is due to be completed by July 2000, the current focus being the completion of the TDA; Lake Malawi Biodiversity Conservation Project which commenced in 1994, concluded in June 1999 and has been extended for an additional year to allow the hand over of project activities to national institutions; and the Lake Victoria Environmental Management Project which is due to be completed in 2002. In the presentations, emphasis was placed in the strengths and weaknesses of the projects with the view of identifying future directions for the management of the lakes.

2.2 LAKE MALAWI/NYASA BIODIVERSITY CONSERVATION

2.2.1 Objectives

The Lake Malawi/Nyasa Biodiversity project was designed to establish the scientific, educational and policy basis for the sustainable conservation and management of the Lake's globally important biodiversity. A major objective of the project is the strengthening of capacity among the riparian countries in the fresh water management, research and environmental education disciplines. The project has provided baseline biological and water quality information as a basis for future scientific monitoring and lake resources management. These outputs together with the initiatives to harmonize policy and legislation are expected to strengthen trinational lake research and management, and provide the capacity and information necessary for maintaining the Lake's unique biodiversity resources.

2.2.2 Project Strengths/Outputs

The main output of the project was the assessment of water quality of the lake including the identification of pollution sources, and the requirements necessary to continue to monitor different pollution levels. In terms of national capacity building, nine scientists from the three riparian countries were trained at the advance degree level (seven at MSc. and two at Ph.D.).

A major achievement of the project was the creation of increased awareness of the environmental issues being faced in the management of the lakes. This was achieved through the use of local and

⁶ Alex Bulirani, Interim Project Manager made the presentation on Lake Malawi; Dr. F. L. Orach-Meza, Uganda National Co-ordination for the Lake Victoria Management Project and Dr. Andy Menz, Project Co-ordinator for Lake Tanganyika.

regional cultural groups. In addition, a number of persons from the riparian countries were trained in environmental education. At least one national research station was rehabilitated and used during the implementation of the project. The Strategic Action Plan for the Nankumba Peninsula and Lake Malawi National Park were also developed.

2.2.3 Project Weaknesses/Shortfalls

A number of weaknesses were highlighted; these included the biodiversity map and lake-wide management plan which were not completed; the incomplete rehabilitation of three national monitoring stations; the incomplete review and harmonization of legislation of the riparian countries dealing with the management and use of the lake; and the unfinished conservation and management strategy for biodiversity hotspots. In addition, the scope of some project activities were expanded to include elements not budgeted for in the original conceptualisation of this project. There were also limitations with the scope of the project as it did not include the catchment area, even though it is recognised that *what happens in the catchment determines what happens in the lake*.

With respect to building scientific capacity of the riparian countries to continue to monitor the lake, it was observed that there was a disconnection between the scientific inputs required for monitoring the lake's parameters and the capacity provided through the projects. More emphasis was apparently placed on the use of external consultants than on building of national and regional capacity to carry on beyond the life of the GEF resources. Problems were experienced in undertaking scientific investigation as the equipment used had been idle for such a long time that it had deteriorated to the extent that it could not be used. In addition, the slow flow of information on legal requirements for foreign scientists to work in the various riparian countries and special sites slowing down the implementation processes as well as a lack of interlinkages between the national and regional institutions. As a consequence, adequate provisions were not made in the project for the effective transfer of project functions to national and regional institutions.

Various donors have supported a range of initiatives in and around Lake Malawi. Some of these have addressed priority environmental concerns, but a multi-sectoral regional framework and implementation capacity at the local level are not well developed. In the absence of such a strategic framework for the Lake and its ecosystem, these initiatives have sometimes fallen short of realizing their maximum potential. It was highlighted that a co-ordinated environmental programme is expected to generate greater benefits than the sum of any individual sector programmes, since it will reduce uncertainty in respect to actions by any sectoral agency or local government and lower the probability that benefits of actions taken by an individual agency or government unit will be offset by actions or non-actions by others.

2.3 LAKE VICTORIA ENVIRONMENTAL MANAGEMENT PROJECT (LVEMP)

Of the three projects reviewed, LVEMP seemed to be the most country-driven as it was conceived and developed by local stakeholders of the participating countries of Kenya, Uganda and Tanzania in response to urgent environmental concerns.

2.3.1 Objectives of the project

The fundamental objective of the project is to restore a healthy, lake ecosystem so that it can support, in a sustainable manner, the many human activities in the catchment and in the lake itself in a *holistic regional approach to the management of an ecosystem*.

Four objectives that have been adopted for environmental management of the lake basin; to maximise the sustainable benefits to riparian communities from using resources within the basin to generate food, employment and income. Supply of safe water, and sustain a disease free environment; to conserve biodiversity and genetic resources for the benefit of the riparian communities; to harmonize national and regional management programmes in order to achieve to the maximum extent possible the reversal of environmental degradation; and to promote regional co-operation.

These general development objectives were translated into more specific quantitative goals and activities. The project, the first of its kind within the region, is addressing a complex set of managerial, scientific and technical and institutional issues across the countries. The component tasks are currently being implemented through the various lead agencies located in Government Ministries and Parastatal Organisations which liaise closely with NGOs, CBOs, District and Town Authorities and rural communities.

2.3.2 Project strengths/Outputs

In reviewing the LVEMP a number of project strengths were identified, including the bottom-up planning approach adopted by the project preparation process which ensured participation at grass roots level; and the basis the project provides for regional co-operation through mechanisms such as the Regional Policy and Steering Committee⁷ (RPSC). This Committee provides overall co-ordination and policy guidance for the project a framework for establishing and provides linkages between the regional and national aspects of the project and to the Secretariat of the East African Co-operation.

Another strength of the project is the establishment of the Lake Victoria Fisheries Organisation (LVFO), an independent, inter-governmental organisation established by a tripartite Convention in June 1994, by the governments of Kenya, Tanzania and Uganda. It has the collective responsibility of member states towards the lake and the need for joint decision making and action.⁸ Less clear, however, was the role of LVFO in relation to the various activities being undertaken by the project. Other strengths which were highlighted included the establishment of the Fish Levy Trust which is intended to raise funds to continue project activities after the conclusion of GEF funding; the establishment of active lakeside laboratories in the participating countries to carry out continuous research and monitoring and training of professionals to sustain the project activities once GEF funding has ended.

⁷ Includes three Permanent Secretaries from the National Policy and Steering Committee

⁸ M. J. Ntiba, C.T. Kirema-Mukasa, W. M. Kudoja and J.M. Ikilenya, *The Role of The LVFO in the Regional Coordination of the Three Riparian Countries in the Management of Lake Victoria Resources*

Community participation has been woven into virtually every component through funding of micro-projects involving a great deal of community training and hundreds, stakeholder workshops and all aspects of scientific and technical development.

2.3.3 Project weaknesses

In terms of project weaknesses, the exclusion of the sub-catchments areas in Rwanda and Burundi as part of the project, was identified as a major constraint in view of the inputs received from those catchments into Lake Victoria. In addition, the absence of sufficient information dissemination mechanisms to facilitate the flow of information between national and regional institutions and stakeholder groups was identified as an issue which needs attention.

From a scientific and technical standpoint, it was observed that the Project Technical/Scientific Advisory Committee has had a marginal impact on the project. There was little evidence that the Strategic Science Planning process recommended by STAP⁹ in its Selective Review of 1996 as an integral part of project implementation activities has been adopted. In the absence of science, the greatest threats to the project were identified as the setting of unrealistic targets and failure to strengthen scientific capacity in the participating countries to ensure sustainability of project activities. It was highlighted that the project focus of the LVEMP, rather than a problem focus, has created a certain amount of inflexibility and little room for modification of the project as emerging factors arise.

2.4 POLLUTION CONTROL AND OTHER MEASURES TO PROTECT BIO DIVERSITY IN LAKE TANGANYIKA

2.4.1 Objectives of the project

The overall objective of the Lake Tanganyika Project is to demonstrate an effective regional approach to control pollution and to prevent the loss of exceptional diversity of the lake. To achieve this objective, eight main components were undertaken, namely a Biodiversity Special Study; a Pollution Special Study; a Sedimentation Special Study; and a Fishing Practices Study; Socio-economics Special Study, Legal Institutional Components, Development of a SAP; Environmental Education and Training Component.

⁹ STAP recommended that a Strategic Science Planning process be implemented comprising of the following steps (i) the design an Environmental management Information System (EMIS) as a basis for Strategic Planning (ii) the identification of uncertainties in that design which needs to be resolved by scientific work (iii) the preparation of a Science Plan to resolve the uncertainties, and (iv) the preparation of a plan for implementation of that Science Plan

2.4.2 Project Strengths¹⁰

As part of national capacity building research station and vessels were rehabilitated at the Tanzania Fisheries Research Institute at Kigoma, Zambia's Department of Fisheries Station in Mpulugu, Bujumbura, Burundi and Hydrobiological Research Center in Uvira, Congo. Basic equipment needed to carry out research was installed at these stations.

Another major achievement of the project is the process which has led to the formulation of a Legal Convention for the management of the lake. The process began with an analysis of existing legislation relevant to Lake Tanganyika from all countries and was followed-up by a number of regional legal drafting workshops. The draft Convention is expected to be ready by April 2000.

An innovative aspect of the project included a training initiative which provided the opportunity annually for twelve African University students and twelve students from the University of Arizona to undertake an intensive education and research experience on Lake Tanganyika.

The various project activities have culminated in the preparation of a **Strategic Action Plan (SAP)** for Lake Tanganyika was conducted under a participatory planning process for stakeholders to identify and prioritise their concerns about the lake environment. A series of national and regional workshops culminated in a list of national and regional priorities for the lake. It is anticipated that the SAP will be endorsed by the participating countries later this year.

The project has generated the local interest crucial to the continuity of the project creating higher chances that the activities will be carried forward beyond the project span. There are more than 74 institutions that are currently collaborating with the project. Other projects have shown a willingness to co-operate. There is information exchange between the project and the Lake Mweru Co-Management Project promoting sharing of experiences. The project has gained the approval and support of the community who are now grouped into development committees facilitating the potential for some of the project components to be demand driven by the lakeshore communities themselves.

An important product of the project has been the development of a GIS system as a means of providing maximum utilisation for the project's data sets on biodiversity, pollution, sedimentation, fishing practices and socio-economics. The system allows resource managers to query the different data sets and study patterns and processes as a function of these different variables.

¹⁰ J.S. Phiri, G. M. Chitalu, Zambia: Overview of the Lake Tanganyika Biodiversity Project Compiled from A Paper Presented to STAP of the GEF, National Coordination Office, ECZ, Lusaka Malawi January 14-15 2000.

2.4.3 Project Weaknesses

The implementation process has a number of problems mainly arising from the manner in which the project was designed. The original project design did not include the riparian states thus omitting a number of issues pertinent to riparian states, an example of which is the manner in which contractors are engaged. Ideally the riparian states should be included in the negotiations but this is not always the case.

Financing of the special study activities conducted by the national co-ordinators has been irregular, particularly those without regional facilitators. It is important that national co-ordinators are actively involved in these activities as they are the best drivers of the project activities for and on behalf of their states.

2.4.4 Conclusions

Following are a number of conclusions which resulted from the presentations and the discussions which followed:

1. There is a clear recognition by all the riparian countries that the lakes are not providing the range of services as they did in the past. As a consequence, quick action is necessary to reverse the situation in all of the lakes. It was emphasised that such actions should take place within a watershed/catchment framework and preferably within a programmatic multi-lake basin.

Though significant progress has been made in understanding the dynamics of the lake, many uncertainties still remain. The evolution and management of the lake ecosystems is an ongoing process. As a consequence, there is a need for continued research and monitoring in order to properly address the uncertainties and evolving management issues.

2. A recognition of the importance of a thorough scientific understanding of dynamics of the East African Lakes. Where scientific knowledge is lacking, this deficiency should be remedied by the provision of opportunities for research to provide data necessary to guide management decisions. It was however emphasised, that the need for research must be balanced by the immediate task of addressing poverty and social and economic development in the catchment areas of the lakes.
3. The building of scientific capacity and the development of a science culture in the riparian countries with respect to the lakes was considered as an important building block of ensuring long-term sustainability of scientific investigations and monitoring activities in the lakes. This should be done in association with the strengthening of local and regional scientific institutions and the development of network at the national, regional and international levels.

In this regard, consideration ought to be given seriously to the notion of building scientific capacity as practiced by the projects. It was emphasised that a balance needs to be struck between the use of external consultants on the one hand and building of local and regional

capacity on the other, to ensure that a cadre of persons capable of sustaining project activities beyond the GEF financing of the projects is developed.

It was reiterated that national programmes should be supported and executed in each of the riparian countries by national scientists rather than international experts on short visits or consultancies to ensure sustainability of the project work after the project time has expired.

4. There is lack of a clear mechanism(s) for integrating science in the various projects; and/or the exchange of scientific data between the various projects.
5. There is a lack of mechanism(s) for integrating the private sector in the management of the lakes.
6. There is a lack of mechanism(s) to ensure commonality of standards for data being collected by the three East African lakes.
7. The riparian countries for the three lakes ought to consider the possibility of developing legal instruments for the management of the lakes, thus highlighting commitment to the sustainable utilisation and protection of the lakes.
8. The need exists for research facilities to allow African scientists to undertake research on the lakes. An integral part of such facilities should be the encouragement of creativity and accessibility to both in terms of geographic access and access to informative data.

It was pointed out by the representative of the GEF Secretariat that the GEF Operational Strategy is not consistent with funding the types of science activities highlighted.

SECTION 3: TOWARDS A PROGRAMMATIC, MULTI-LAKE BASIN APPROACH: FUTURE DIRECTIONS AND RECOMMENDATIONS

3.1 INTRODUCTION

The discussions/working group sessions which followed the presentations of the GEF projects, used the information presented including the strengths and weaknesses of the projects as a basis for examining the future directions which should be taken in addressing the East African Lakes. Following are the main conclusions adopted by the meeting:

3.2 PROGRAMMATIC MULTI-LAKE BASIN APPROACH¹¹

3.2.1 Rationale

A programmatic multi-lake basin approach for the East African Great Lakes is highly desirable given the commonality of issues being faced by the riparian states of the three lakes (i.e. watershed degradation; water hyacinth; blooms of potentially toxic algae; reduction of fisheries and fish kills; increasing sedimentation etc.); and the need to share and disseminate monitoring and research results information and experiences on management approaches; scientific information and technologies for addressing various issues. From a climatological standpoint, a multi-lake basin approach to the study of the East African Lakes would also enable one to better distinguish between the impact of climate (monsoon and air temperature changes) from human impact (which varies among the lakes).

A programmatic multi-lake basin approach to the East African Great Lakes provides an overall framework within which interventions can be designed nationally, regionally or intra-regionally to ensure complementarity; facilitates a more co-ordinated approach to resource allocation by donor agencies; facilitates technology transfer and exchanges of experience between riparian countries and a framework not only for building regional scientific capacity but also ensuring scientific standards for investigations being undertaken on the lakes. Such an approach would also provide a more predictable framework for longer-term private sector involvement and investment

3.2.2 Objective

It was emphasized that overall objective of the multi-lake basin approach *must be the sustainable use of the lake resources for the benefit of riparian peoples* and by design must include the *watersheds of the respective lakes*. In this context, the importance of bearing in mind the existence

¹¹ It should be noted that the concept of a programmatic multi-lake basin approach as suggested above differ from the concept highlighted by the GEF Secretariat and the Implementing Agencies. The programmatic approach highlighted by the GEF Secretariat focused on a lake basin project by lake basin project, all of which might be part of a larger, multi-project, longer-term approach.

Despite the two slightly different interpretations of what should constitute a “programmatic approach”, for the East African Lakes either individually or collectively, enough commonality exist between the two interpretations to form a basis for determining what should be an appropriate future response for the management of these lakes.

of natural variability when interpreting observations was also emphasised. As a consequence, science must be an integral part of such an approach to facilitate a better understanding of the dynamics of the lakes given their vulnerability to change (For example, it was observed that 14,000 years ago Lake Victoria dried out and the widespread fish kills observed on a periodic basis in the three lakes may have been due to localised upwelling, exposing the fish to anoxic conditions).

3.2.3 Time Frame

A 7-8 years time span was deemed desirable for a programmatic multi-lake basin approach for the East African Great Lakes. The establishment of monitorable indicators to measure success was identified as a critical element of the programmatic approach.

3.2.4 Co-ordinating Mechanism

A co-ordinating mechanism was considered as being central to a programmatic multi-lake basin approach. The possible functions of the co-ordinating mechanism were identified as:

- *Information clearing house:* Serve as the depository of scientific information and data on the East African Lakes as well as a linkage between managers, policy makers, scientists and researchers and the donor community.
- *Oversight Research Facilities:* Serve as an oversight entity for the data archives and inventory; the independent, regional/international research facility and associated field stations and a logistical facility to manage research activities, research assets such as field laboratory equipment, etc.
- *Training/Capacity Building:* Facilitation of training and capacity building, for African Scientists/research working on the lakes.
- *Administration of grant based research:* Management of the various facilities aimed at promoting grant based research targeted to issues of the Great Lakes and their catchments.
- *Building linkages with other lake countries:* In this regard, mention was made by scientist from North America, particularly Canada.

Within the context of a multi-lake basin approach a number of activities were considered which could form elements of a possible programmatic approach.

3.3 INFORMATION MANAGEMENT AND DISSEMINATION

- *Synthesis of Available Information/data:* A large amount of data already exists on the East African Lakes. Notwithstanding this, resource managers still experience difficulties in answering policy questions concerning the lakes' resources (i.e. fisheries). A synthesis and analysis of available information/data including the results of the GEF projects are a necessary first step in the development of a programmatic multi-lake basin approach. Such an exercise will facilitate priority setting, identification of gaps in knowledge and the linking of scientific information with national regional priorities.

- *Searchable Data archives and inventory:* Such an archive would contain a metadata inventory of the content and characteristics of known data sets pertaining to the East African Lakes. These data sets may not necessarily reside with the co-ordinating mechanism, but the metadata description shall include appropriate archival identification to facilitate data access. It was envisaged that the “co-ordination mechanism/secretariat” would have responsibility for these functions. Data archives which are deposited with the “Co-ordinating Mechanism/Secretariat” shall be accessible to national, regional and international scientists and be available electronically.
- *Translation and Dissemination of Information to Stakeholders:* Mechanisms should be established as an integral part of the programmatic, multi-lake basin approach to ensure that data/information collected by scientists, researchers and the various projects are translated into formats that could be easily understood by stakeholders (i.e. managers, planners, farmers, fishermen e.t.c.). The Sea Grant Programme of the Great Lakes Region of U.S.A. was cited as a possible model.

3.4 SCIENTIFIC INFRASTRUCTURE AND MONITORING

Key structural prerequisites for scientific investigations in the Great Lakes are capable and reliable research facilities easily accessible to national, regional and international investigators/researchers. Provisions and guidelines for inter-comparisons and standardisation of methods as well as database clearing house facilities are also essential components of a co-ordinating mechanism. Scientific needs also include research permit facilitation to provide geographic access to the lake waters and their catchments which lie within multiple national boundaries.

- *Strengthening of national and regional scientific institutions:* There is need to improve the capacity of national and regional scientific institutions which are addressing various aspects of lake management. Efforts should also be undertaken to facilitate the networking of these institutions not only nationally and regionally but also internationally.
- *Multi-country Research facility supported by a Network of National/Regional Institutions:* The establishment of an independent multi-country research facility was identified as a possible way of overcoming the constraint faced by African scientists in undertaking scientific investigations in the East African Great Lakes. There should also be field stations, one for each lake, which is considered as a necessary part of the strategy for building a cadre and network of African scientists/researchers focusing on the issues impacting on the lakes.

A critical and fundamental element of establishing the scientific infrastructure should be the strengthening of existing institutions (both national and regional) addressing various elements of the lakes management. To facilitate and strengthen this process will be linkages at various levels, namely within and between national institutions in each country; within individual lake basins; between the lakes and with international partners and institutions.

- *Comprehensive, Long-term Monitoring Programmes:* Long term stability and continuity of monitoring properties are prerequisites for understanding the dynamics of East African Lake systems, and to detect patterns in the resource fluxes particularly the long term context of land-

water interactions. Since it is unlikely that any one of the riparian countries can individually sustain long-term monitoring programmes, such programmes, in order to be sustainable, should be Monitoring programmes in order to be sustainable should be carried out with the full participation of the national and regional institutions.

To be useful for decision making purposes, monitoring programmes should be subjected to quality assurance.

These programmes may include but not limited to:

- Primary production, suspended sediments, and water chemistry;
 - Point and non-point sources of nutrients or other pollutants by measuring atmosphere as well as terrestrial fluxes, such as the atmospheric deposition of phosphorous on Lake Malawi as a result of burning of organic matter.
 - The relative importance top down versus bottom up contribution to eutrophication of Lake Victoria in nearshore and central waters of the lake;
 - Pollen sources for the lakes from sediment traps and atmospheric deposition;
 - Fish stock assessments including biological productivity and life history of species, particularly endemics;
 - Hydrogeochemical budget for lake intake;
 - Process studies to understand hydrological and chemical functioning;
 - Social and economic parameters including the social structure of riparian communities;
 - Testing of the hypothesis that muddy water is the prime factor in reducing mating of highly coloured fish species or inhibiting spawning through physical means or reduction of fish food.
- *University Participation:* An essential element to ensure continuity and long-term sustainability of scientific and technical interest in the East African Lakes is the active involvement of the universities of riparian countries. Universities ought to be active partners in the design, development and implementation of the programmatic multi-lake basin initiative.

In addition, affiliations would need to be strengthened between universities in the riparian countries and national research institutions as well as with universities and research institutions in North America and Europe who already have activities on the East African Lakes. The IDEAL network of scientists and institutions was considered as a logical starting point for linking international scientists and institutions with their counterparts in Eastern Africa.

Institutional strengthening of the participating universities in the proposed initiative was identified as an important activity.

- *Satellite Lakes:* Provisions should be made in the programmatic, multi-country basin initiative for the smaller lakes of Eastern Africa. Careful study is crucial means of testing some of the science results within the region, as a means of improving understanding of biological linkages in the large lakes, permitting improved interpretation, calibration and collation of the large lakes records.

3.4.1 Facilities to Encourage Creativity and Research

- *East Africa Lakes Foundation/Endowment Fund*: As a means of providing incentives to African scientists/researchers to undertake investigations in the East African Lakes the establishment innovative financial mechanisms were considered; namely an East Africa Lakes Foundation and/or Endowment Fund.

The purpose of these innovative financial mechanisms is to facilitate investigator-initiated proposals with budget requests from national and regional scientist/researchers, competitive small grants for research materials and participation in scientific meetings. These modalities should be capable of independent funding decisions subject to peer review and periodic oversight by external scientific bodies.

3.5 CONCLUSION

Generally, the meeting called for a paradigm shift in the management of the East African Lakes. Fundamentally, it called for management based on integrated data systems in which science has an important role to play. This it was recognised must be targeted to reducing poverty and stimulating economic and social development of the peoples in the lake basins.

There was recognition that the range of activities being suggested might not necessarily be funded by the GEF resources only but by a range of funding agencies including the international science community. What was however emphasised was the need for a framework to facilitate a more co-ordinated approach to the allocation of resources for the management of the East African Lakes.

In order to facilitate a follow-up to the discussion, the meeting recommended that a follow-up session be convened to discuss specifically the elements of a programmatic, multi-lakes basin initiative for the East African Lake System. The meeting requested STAP to take the lead in organising such a follow-up.

Agenda

DAY 1:

Friday, 14 January, 2000

9.00 a.m. – 9.45 a.m.

Opening Session

Welcome and Introductory Remarks: Prof. Eric O. Odada, GEF-STAP

Opening Statement: Honourable Harry Thompson, Minister of Natural Resources & Environmental Affairs

Aims and Objectives of the Review Session: Prof. Eric O. Odada

9.45 a.m. – 10.00 a.m.

Coffee

10.00 a.m. – 10.45 a.m.

The GEF Operational Strategy and Programmes and its implications for the East African Lakes: Dr. Alfred Duda

10.45 a.m. – 1.30 p.m.

Presentations on Project Implementation Experiences:
National and Regional Coordinators and Participating Scientists/
Scientific Institutions – Lake Tanganyika: Dr. A. Menz
Lake Victoria: Dr. O. Meza
Lake Malawi: Dr. A. Bulirani

Discussion on key scientific and technical issues evolving from project experiences

1.30 p.m. – 2.30 p.m.

Lunch

2.30 p.m. – 5.30 p.m.

Panel: The State of Science of the East African Lakes and Implications for Future Management: Key Scientific and Technical Issues.

Lake Victoria - Dr. Bob Hecky, Canada

Lake Tanganyika - Dr. Pierre-Denis Plisnier, Belgium

Lake Malawi - Dr. Graeme Patterson, UK and
Dr. Dan Livingstone

Discussion

DAY 2:**Saturday, 15 January 2000**

8.45 a.m. – 9.40 a.m.

Some thoughts on how to integrate relevant scientific data and information into the GEF work on African Lakes: Dr. Thomas Johnson

Presentations by NORAD: Dr. A. Skara

MacArthur Foundation: Mr. A. Ndiaye

Discussion

9.40 a.m. – 10.10 a.m.

The Land and Water Initiative for Africa: An Opportunity for the Scientific and Technical Community: UNEP/GEF

10.10 a.m. – 3.00 p.m.

Working Group Session: Working Group 1: The Future Role of the Scientific and Technical Community in the Management of the East African Lakes.

Working Group 2: Learning from the Experiences of the East African Lakes: Modalities for Information Exchange and the Integration of the Scientific and Technical Communities in Management of the Lakes

3.00 p.m. – 4.30 p.m.

Presentation of Working Group Reports

Recommendations and Conclusions

4.30 p.m.

Closure of meeting

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