SUMMARY

List of acronyms and abbreviations

BDI	Republic of Burundi
BioSS	Biodiversity Special Studies
CEPGL	Economic Commission of the Great Lakes Countries
CIC	Copenhagen Informal Consultations (1991)
CRH	Research Centre in Hydrobiology (Uvira, RDC)
CRRHA	Regional Research Centre in Applied Hydrobiology (Bujumbura, BDI)
DRC	Democratic Republic of Congo
ECZ	Environmental Council of Zambia
EESS	Environmental Education Special Studies
FAO	Food and Agriculture Organization of the United Nations
Finnida	Finnish International Development Agency
FPSS	Fishing Practices Special Studies
GEF	Global Environment Facility
GIS	Geographical Information System
GWP	Global Water Partnership
HDI	UNDP Human Development Index
ICWE	International Conference on Water and Environment (Dublin Conference, January 1992)
IFE	Institute of Freshwater Ecology
INECN	Institut National de l'Environnement et de la Conservation de la Nature (BDI)
IUCN-ROSA	International Union for Conservation of Nature, Region of Southerne Africa
IZRM	Integrated Water Resources Management
LARST	Local Application of Remote Sensing Technology
LTBP	Lake Tanganyika Biodiversity Project
LTR	Lake Tanganyika Research project (FAO-Finnida)
MRAG	Marine Resource Assessment Group
NEAP	National Environmental Action Plan
NFC	National Follow-up Committee
NGO	Non Governmental Organisation
NOAA	National Oceanic and Atmospheric Organization
NPC	National Project Coordinator
NPD	National Project Director
NRI	Natural Resources Institute
NTA	National Technical Advisor
NWG	National Working Group
OAU	Organisation of African Unity
OVI	Objectively Verifiable Indicator
PCU	Project Coordination Unit
Prodoc	Project Document
PSC	Project Steering Committee
PSS	Pollution Special Studies
RBA	Regional Bureau for Africa (UNDP)
R-TAC	Regional TAC (GWP)
SADC	Southern Africa Development Community
SAP	Strategic Action Plan
SARDC	Southern Africa Research and Development Centre
SA-TAC	Southern Africa Technical Advisory Committee (GWP)
SE-SS	Socio-Economics Special Studies
SS	Special Studies
SSS	Sedimentation Special Studies

TAC Technical Advisory Committee
TAFIRI Tanzania Fisheries Research Institute
TANESCO Tanzania Electricity Supply Company
TDA Transboundary Diagnostic Analysis
ToR Terms of Reference
UK United Kingdom
UNCED United Nations Conference on Environment and Development (Rio, June 1992)
UNDP United Nations Development Programme
UNDP United Nations Development Programme
UNGASS United Nations General Assembly Special Session
UNOPS United Nations Office for Project Services
URT United Republic of Tanzania
USD United States Dollar
WA-TAC West Africa Technical Advisory Committee (GWP)
WSCU Water Sector Co-ordination Unit (of SADC)
WWC World Water Council
WWF World Fund for nature
ZAM Republic of Zambia

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FOREWORD

The mid-term evaluation of the regional project UNDP/GEF RAF/92/G32: *"Pollution control and other measures to protect biodiversity in Lake Tanganyika"*, requested by the GEF Unit within the UNDP Headquarters' Regional Bureau for Africa and executed by UNOPS, has been elaborated by two independent consultants[1] based on the terms of reference prepared by UNOPS and approved by UNDP (Annex 1).

The mission took place from November 1st to November 29, 1998. The route of the mission appears from Annex 2 and the field visits from Annex 4.

The evaluation mission visited three of the four riparian countries of the Lake. The Congolese shore of the Lake could not be visited due to the insecure situation of the region. The mission also regrets to have not been able to go to Kinshasa because of communication problems between the Lake region and the capital of the Democratic Republic of Congo. However, the mission has had working sessions on one hand with all the members of the CRH scientific team of Uvira, who were invited to Bujumbura, and, on the other hand, with the official Congolese delegation on the occasion of the Trans-Boundary Diagnostic Analysis (TDA) workshop of Lusaka. In this way the evaluation mission has succeeded in having profound meetings with all the parties to the project.

The members of the evaluation mission would like to thank all the persons they have approached and who have helped them to fulfil their mandate; in particular the political authorities of the beneficiary countries, the agents of the UNDP local offices, the national scientists and technicians involved in the implementation of the project activities and the working team of the NRI Consortium (the list of persons having collaborated with the mission is in annex 3).

The evaluation mission has noticed the great attachment and devotion of the national as well as international operators of the project to the Tanganyika Lake and its conservation. Thanks to this high level of consciousness regarding the importance of the conservation of the Lake, the scientific activities have never been seriously interrupted in spite of the difficult and often also dangerous working conditions.

The members of the mission send their special thanks to UNOPS and to the Project Coordination Unit who have organised the mission and seen to its logistics in a most brilliant way despite the above mentioned particular conditions.

Finally, the members of the mission would like to thank the local authorities and the populations of the visited regions warmly for their reception and their availability.

The opinions expressed in this evaluation report are the authors' opinions. They do not necessarily reflect the point of view of all the parties to the project. They are to be considered

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only as a reliable reflection and an independently formulated assessment of the present situation of the project and of its future.

EXECUTIVE SUMMARY

Presentation

This report summarises the conclusions and the recommendations of the mid-term evaluation mission of the regional project UNDP/GEF RAF/92/G32: ***"Pollution control and other measures to protect biodiversity in Lake Tanganyika"***. The project associates the four riparian countries of the Lake: The Republic of Burundi, The Democratic Republic of Congo, The United Republic of Tanzania and The Republic of Zambia.

The project is part of the second tranche of the GEF pilot phase, with a financing of USD 10 million and a duration of five years. The project is executed by the United Nations Office for Project Services (UNOPS). The implementation is entrusted to a Consortium of British Companies, led by the *Natural Resources Institute* (NRI) in cooperation with the *Marine Resources Assessment Group* (MRAG) and the *Institute of Freshwater Ecology* (IFE), hereafter referred to en masse as "*The NRI Consortium*".

The mid-term evaluation is made 3 years and 3 months after the official starting date of the project (July 31, 1995, when the contract between UNOPS and the NRI Consortium was signed). Considering the delays occurred in most of the project activities, the evaluation mission does not consider the lateness of evaluation to be prejudicial to the pertinence, nor to the usefulness of its analyses. However, the remaining period until the official closing date of the project (July 31, 2000) is reduced equivalently. In addition to this, it should be noted that the possibility of completing the project within the given time is one of the crucial points of the evaluation.

The evaluation mission has analysed the history of the project, its present state of implementation and the pertinence of the approaches presently made to achieve the pursued objectives within the given period and budget of the project. But first of all, the evaluation mission has focused on the prospects of having, by the end of the project, the appropriate instruments and the required national capacities for enabling the riparian countries to manage the exceptional resources of the Lake Tanganyika in a sustainable way within the frame of its basin.

From this perspective the evaluation mission has endeavoured to adopt a prospective instead of a retrospective approach. The knowledge of the past and the genesis of the encountered problems are important only because of the deduced recommendations for the future.

Many recommendations are submitted to the examination of the GEF Unit within the UNDP Regional Bureau for Africa. Several of the recommendations have a priority character – these are presented into boxes in this executive summary.

All the observations and recommendations are repeated in the report in a synoptic table indicating for each recommendation: who the observation is meant for (who is supposed to implement the recommendation) and, if necessary, observations for the implementation. The same table has a column referring to the chapters of the report where the arguments supporting the observations and recommendations have been developed.

Finally, according to its terms of reference, the evaluation mission has tried to deduce some general observations and recommendations that might be useful for other ongoing or future GEF projects. These observations and recommendations belong under § 5.: *"Lessons learned from the project*".

General observations

In spite of the difficulties assessed in the project's course, the evaluation mission has noticed that, thanks to this project, the Authorities of the riparian countries have become fully aware of the exceptional character of the Lake Tanganyika and of the importance of focussing on its conservation. All the authorities and stakeholders that have been consulted have resumed on their own account the objective of protecting the Lake. That is why the evaluation mission finds that in spite of the present problems[2], the project must be completed in order to come up to the legitimate expectations of the beneficiary countries.

The observed difficulties are not only a question of time and cannot be solved simply by a prolongation of the project in order to compensate for the ascertained delays. The evaluation mission estimates that the present situation of the project is giving rise for concern, not only when it comes to respecting the deadline but also concerning the productivity of the working methods and the quality of the expected results. This is due to several reasons: some are internal and will be analysed in details in this report while others are out of the influence of the project operators, in particular the insecure situation of the region.

In its present form (strategies, organisation and methods) the project is not able to completely fulfil the stipulated objectives. The strategies, the organisation and the present methods of the project need to be revised to lead to the expected results, namely ***tools for the joint management of Lake Tanganyika meeting the present and future problems and exploitable by the riparian countries.***

The evaluation mission points out that the title of the project ***"Pollution control and other measures to protect biodiversity in Lake Tanganyika"*** must not override that the project is part of the GEF concentration area ***"International Waters"***. Being a project of the GEF pilot phase, it has an innovative and demonstrative purpose which is not limited to the conservation of the biodiversity of the Lake but aims more generally at a joint management of the Lake and its basin by the riparian countries, according to methods that are transposable to other water bodies and other countries facing the same type of problems.

Since the origin of the project, the project operators have focused on the scientific aspects of the supposed threats against biodiversity. The aspects relating to the management of international waters, in particular the institutional and legislative elements, have been somewhat neglected. And yet it is the way of management by the riparian countries – correctly described in legislative and institutional terms and supported by a satisfactory knowledge of the dynamic of the natural system of the Lake – that needs to be in focus of the questions raised by the joint exploitation of the international waters of the Lake Tanganyika.

[2] Provided that the security situation in the region is not further deteriorated compared with the conditions under which the mission has taken place (November 1998).

Priority recommendation No. 1: Refocus the project on the GEF concentration area *"International Waters"*

The evaluation mission finds it necessary to refocus the project on the GEF concentration area "International Waters" and more precisely to aim at the joint management of a shared water resource. All the activities and the results of the project should strive for this objective. The results should be presented in coherence with the use that will be made of them by the policy decision makers and the operators of the future managerial entity of the Lake.

Having identified the core of the project, the evaluation mission has pointed out five essential points for the understanding of the present difficulties of the project in order to facilitate the structuring of the recommendations that are relevant for the subsequent implementation:

1) Evolution of the logical framework of the project and parallel development of principles concerning the management of water resources and their quality;
2) Project ownership by the beneficiary countries and capacity building;
3) Present state of substantive results and scheduling of future activities;
4) Substantiality and scientific coherence of the special studies;
5) External factors bearing on the implementation of the project.

A sixth point concerns the general lessons to be learned from the project.

1. Evolution of the logical framework of the project and parallel development of principles concerning water resources and quality management

The structure of the project has changed much since the origin. The evaluation mission has identified not less than six different successive versions of the project structure:

The activities described in the project brief from 1992;

The objectives and activities described in the project brief from 1993;

The objectives, products and activities as described in the Prodoc (1994);

The objectives, products and activities of the NRI Consortium's bid (1995);

The objectives, products and activities as revised in the inception report (1997);

The objectives, products and activities as implemented currently (November 1998).

A synoptic comparison of these different versions of the project design can be found in the body report (§ 3.1.4). It should be emphasised that, at the end of November 1998, during the TDA workshop in Lusaka (where the evaluation mission has attended as observer), the participating countries asked for a modification of the project strategies and scheduling which might result in a revision of the products and the activities. It seems indispensable that such a revision is based on the conclusions of the evaluation mission.

The evolution of the project organisation and of the scheduling of activities reflect the weakness of the threads that have guided the design and the implementation of the project right from the origin. As mentioned before, the project is part of the GEF concentration area "International waters" but it is the problem of biodiversity that has been put into focus, overriding the other

problems. This original lack of clarity concerning the target explains the hesitations in the project strategies and partly also the ascertained delays.

Priority recommendation No. 2: Reformulate and stabilise the logical framework

The evaluation mission proposes that the logical framework of the project is reviewed with focus on the central problem that there is presently no framework for the management of the Lake Tanganyika as an international basin. Such a refocusing also allows the project to be put back in the GEF concentration area according to which the financing has been granted (see recommendation No. 1). In this perspective, the protection of the biodiversity appears to be a beneficial effect of a sound and rational management of the Lake and not the central problem of the management of the Lake.

The evolution that has been observed in the project design has not taken into account the parallel development of the concepts and principles of water resources management as stated in the Copenhagen-Dublin-Rio process and refined since then. At the international level, the concepts and doctrines have developed and been refined since Rio (see § 3.1.3 and annex 7). The principles and methods for fresh water resources management that are shared between two or more countries have been developed, particularly in the SADC region to which three out of the four riparian countries of the Lake Tanganyika belong (D.R.Congo, Tanzania, Zambia).

Priority recommendation No. 3: Ensure the consistency of the project with the principles for integrated management of water resources and with the pertinent conventions in this field, at a world wide as well as at regional level.

The evaluation mission considers that the project strategies and the expected main results (a regional convention and a strategic action plan) should be based on:

- *the principles for management of water resources as stated in Dublin and Rio (Annex 7);*
- *the SADC protocol on shared water course systems;*
- *the International Convention on the law of the non-navigational uses of international watercourses (1997);*

As for the project organisation, the evaluation mission has noticed two different versions of the organisation chart for the implementation (see § 3.1.6):

- the Prodoc version[3];
- the version which is presented in the ”Project Newsletter”.

[3] Contractually, the Prodoc is no longer the reference document since the signature of the contract binding UNOPS to the NRI Consortium. Actually, the Prodoc comes in the last place after the proposal of the NRI Consortium, in the precedence order of the documents that are an integral part of the contract. In this connection, the evaluation mission draws the attention to the fact that the technical proposal of the NRI Consortium has not been forwarded to the governments of the beneficiary countries. For these authorities, the Prodoc, being the only document they have signed remains the reference document (excepted amendments resulting from the collective decisions of the Steering Committee).

The evaluation mission is of the opinion that none of these two versions reflects correctly and completely the desired organisation for a project of this scale and that the present titles of the organs and positions give rise to further confusion.

Priority recommendation No. 4: Revise the organisation chart of the project, write down the mandates and/or the terms of reference for each organ as well as job descriptions.

The evaluation mission proposes a revision of the organisation chart of the project based on the following (which is to be left unchanged until the completion of the project, without creating new structures, nor new positions):

1. *Respect for the hierarchical position and the exact functions of the different positions and organs;*
2. *Compliance of the titles of organs and positions with their real mandates;*

- *For example, the present "National Coordinators" are in fact the "National directors" of the project. The real national coordinators are the present "Assistants to the National Coordinators" who do not depend on their authority since they are part of the project team and are paid by the NRI Consortium.*
- *Likewise, there can be only one managing authority of the project, namely the Project Steering Committee, consisting of the project parties (the four beneficiary countries, UNDP/GEF and UNOPS as executing agency). The present "National Steering Committees" have no authority to run the project. They are merely "National follow-up committees" whose main role is to facilitate the execution of the project in their respective countries, to ensure the compliance of the project orientation with the national policies and institutional framework and, finally, to look after the implementation of the results.*

3. *Respect for the national institutional framework: it should be avoided that the project team entrusts the implementation of certain activities to other national structures than those having the official authority (see priority recommendation No. 7).*

A revised organisation chart for the project is given in the body report.

2. Project ownership by the beneficiary countries and capacity building;

The present institutional arrangements for implementation are not likely to facilitate the appropriation of the methods and results of the project by the political decision-makers and the national experts.

Actually, each team of national specialists inside each country has only a limited and fragmented view of the project strategies. The raw results are sent to the NRI Consortium in Great Britain. The results are treated by consultants outside the region with a very limited participation of national specialists.

Under these circumstances, the evaluation mission estimates that it will be difficult for the national decision-makers and scientists to take over the managing instruments and tools whose broad outlines they are still not acquainted with.

Priority recommendation No. 5: Involve the nationals further in the definition of the work programmes

The evaluation mission emphasises that the NRI Consortium has only got a temporary role as a contractor of UNOPS, while the countries have a long term responsibility for the application of the project results. They are therefore in the best position to specify their own needs and should be associated as soon as possible in the use of the results. The working programmes of the project should be specified in close collaboration with the decision-makers and the national specialists according to the following elements:

1. *the expected situation by the end of the project (the needs of the countries for a joint management of the Lake during the post-project phase);*
2. *the national policies and institutional frameworks (see priority recommendation No. 7);*
3. *the capacities of the local experts; this will make it easier to target the needs for professional training (see priority recommendation No. 8).*

The evaluation mission finds that the recent recruitment of expatriate facilitators for coordination of the special studies does not come up to the objectives of the project unless it is supplemented by the positioning of regional counterparts[4].

Instead of entrusting the coordination of certain activities to international experts, reducing the national experts to the role of executing fragmented tasks, the evaluation mission recommends that the progressive assumption of the coordination tasks by the national experts is initiated immediately.

Priority recommendation No. 6: Make the best qualified national experts on the regional level, work in close relation with the recently recruited facilitators.

In order to do so, the Project Coordination Unit should make an effort:

1) *to identify the best qualified and recognised national experts on the regional level in the different fields of the project;*
2) *to form two-person teams (expatriate facilitator + local specialist) in the four main fields of the special studies (pollution, sedimentation, fisheries, socio-economy);*
3) *to make the local specialists intervene in other countries than their own in the same capacity as the expatriate facilitators and in close collaboration with these.*

The evaluation mission has noticed that the choice of national institutional operators is often guided by practical short-term considerations and consequently it does not always respect the official mandates of the national institutions. So, the choice of operators does not pay enough

[4] The Project Steering Committee had recommended the recruitement of facilitators native from the beneficiary countries. However, the representatives of these countries have not been associated to the selection of facilitators appointed by the NRI Consortium and were simply confronted with the ”fait accompli”.

attention to the problem of a sustainable follow-up and development in the framework of the future management of the Lake.

Priority recommendation No. 7: Identify which institutions are (or will be) mandated to fulfil each of the follow-up/evaluation functions that are planned for the future.

In case some of the institutions that are not presently involved in the project would be responsible for some of these functions, a plan should be prepared and implemented in order to involve them as soon as possible.

In case some of the present mandates should be modified (for technical, economic or practical reasons or for specific reasons in relation to the needs of the management of the Lake), there should be taken initiatives to make the necessary institutional (and statutory) changes.

The primary justifications of this GEF project are the assumption of serious environmental problems and the realisation of the need for creating local capacities "around the Lake" in order to handle these problems. Therefore, the evaluation mission emphasises that the capacity building of the beneficiary countries plays an absolute priority part in the project.

Capacity building encompasses three elements: (1) establishment of the managerial framework for the Lake (concepts and principles, regional convention, strategic action plan, establishment of the Lake management entity); (2) mobilisation of the required human resources to ensure a new way of management and a long term monitoring of the Lake; (3) equipment for the management entity and the national structures with reference to the monitoring of the Lake and its basin.

For the moment, the capacity building is focused on the immediate needs of the project. Consequently, the training of national experts is focused on data acquisition, and the equipment of the national institutions has been defined based on these needs.

Priority recommendation No. 8: Target the training towards the identified needs for the post-project phase

The evaluation mission feels that the training of national experts should not be limited to the immediate needs of the special studies. It should also and especially consider the needs for expertise in the post-project phase. To do so, it is important to define as soon as possible the outline of the future management entity of the Lake (mandates and job profiles) and to start training of a sufficient number of national experts to fill the planned jobs, taking into account an inevitable loss rate owing to predictable changes in career (for example by training two experts to the same type of job). At the present implementation level of the project the human resources of each country are sufficiently well-known to allow an immediate identification of the national experts to be trained.

Priority recommendation No. 9: Target the equipment of the national structures towards the needs of the monitoring post-project as well as against the intercalibration and the exchange of data

As for the previous recommendation, the evaluation mission feels that the equipment of the national structures should be designed not only according to the needs of the special studies but also according to the needs of monitoring of the post-project phase.

For that purpose, the equipment should avoid any double use and be homogenised to facilitate the intercalibration and the exchange of data between the riparian countries.

3. Present state of substantive results and scheduling of future activities;

At the beginning of its investigations the evaluation mission has noticed that the preparation of the elaborating process for the strategic action plan, before the completion of the special studies, did not allow the results from these to be taken into consideration and consequently deprived them of any utility. During the evaluation mission, at the TDA workshop in Lusaka (23-27 November 1998), the beneficiary countries asked for a modification of the scheduling of the project activities, which makes the special studies legitimate again.

Priority recommendation No. 10: Respect the logic order of the production of results

1) Compilation of the existing data (incl. the national, regional and international legislative and institutional, framework) → *2) Elaboration of the regional agreement*

3) Special studies → *4) Strategic action plan (SAP)*

The evaluation mission estimates that the results achieved till now, in varying degrees but in practically all fields (legal and institutional framework, planning strategies, substance of special studies, economic evaluation, participatory approaches), are not able to constitute a sufficiently solid basis for a sustainable management of the Lake and its basin.

Priority recommendation No. 11: Make the synthesis of all the pertinent scientific knowledge acquired till now, which is necessary for the definition of the special studies and for the elaboration of management tools for the Lake

The evaluation mission considers that to date there is no summary presenting the basic data after control of their quality and in a way that allows the decision-makers of the riparian countries to exploit them. Consequently, the evaluation mission estimates that this work still needs to be done and that it should be prioritised before producing the other project results: special studies, convention, strategic action plans (see also priority recommendation No. 14).

Priority recommendation No. 12: Direct the production of project results towards the needs for a joint management of the Lake

Considering the hesitations in the approach and the delays that have been observed to date, the evaluation mission estimates that the project activities for the remaining project period should be

concentrated on the needs for the Lake management by the beneficiary countries. All academic types of activities should be concluded, no matter what may be their scientific interest, and it is important to avoid all activities that have no immediate utility, either in terms of intermediary results or in terms of final results exploitable for the joint management of the Lake.

4. Substantiality and scientific coherence of the special studies;

The project concept is based on three general hypothesis concerning the environmental impacts that are threatening the Lake, namely: (a) the changes in land use has led to an increase in the discharge of sediments to the Lake which has an impact on the biodiversity; (b) the pollution damages the water quality and affects the biodiversity; (c) inappropriate and abusive fishing practices affect the biodiversity.

The evaluation mission estimates that these three assumptions were relevant as working hypothesis and that they justified the idea of the project considering the importance and the biologic richness of the Lake. However, none of the three hypothesis was proved by the time of the project formulation and still today none of them has been correctly documented.

Priority recommendation No. 13: Treat as a major problem of the project the question of verifying (or invalidating) the basic hypothesis concerning the environmental impacts that are threatening the Lake

Identification of the real problems and of their seriousness is the only way of defining the future management functions. These functions require financial and human resources. However, the resources of the countries in question are very limited in these fields. It is therefore necessary to act with much discretion in order to avoid weighing unnecessarily on the resources intended for the economic and social development, devoting important means to the resolution of minor problems. The application of the "precaution principle" should be seen in this context.

As indicated above, the evaluation mission finds that the project has produced only little documentation concerning the existing knowledge. The accomplished baseline studies, for example, are in fact limited to inventories of data sources and to the references of previous studies. Three years after the starting up of the project, the general hypotheses of the impact, which constitute the basis of the project, have still not been evaluated based on the compilation of existing data and the special studies are still not sufficiently advanced to give indisputable results.

Priority recommendation No. 14: Complete the data bases regrouping the existing data and install them in the appropriate institutions

The data should be compiled and the state of present knowledge concerning the introductory hypotheses should be established (in order to serve as basis for subsequent studies). The improved understanding of the problems should become a continuous process allowing to refine the prioritisation of the management functions.

Practically all the special studies have been started very late and certain parts of them have still not been initiated. The starting point of the technical studies has been the methodological workshop in August 1997. Most of the fieldwork has been started in 1998. Considering the lack of precision of the existing literature, the evaluation mission finds that the special studies play an important role in the verification (or the invalidation) of the basic hypotheses concerning the impact as well as in the development of strategies for the future monitoring. As expected from the origin of the project, the special studies constitute a precondition for the elaboration of the PAS (see priority recommendation No. 10).

Priority recommendation No. 15: Maximum effort should be laid in a timely implementation of all the special studies and the overall planning of activities shall assure that they can provide the necessary background for the Strategic Action Plan.

The evaluation mission has noticed a certain lack of precision in the overall view of each theme of the special studies and, in general, an insufficient knowledge of this overall view has been observed among the national operators.

As indicated above, this is due primarily to:

- the position of the special studies in the general scheduling of the project activities and to their lack of connection to other products of the project. This problem should be solved further to the changes requested during the TDA workshop in Lusaka (see priority recommendation No. 10);
- the lack of summary of the initial data supporting the special studies. This problem should find its solution if the priority recommendations No. 11 and 14 are implemented;
- the insufficient level of involvement of the national specialists in defining and interpreting the special studies. This problem should also find its solution if the priority recommendations No. 5 and 6 are implemented.

In addition to these reasons, the evaluation mission points out that the present documents which define the special studies, appear to be ”standing instructions” to be complied with rather than arguments on the ”why” and ”how” of these studies.

Priority recommendation No. 16: Prepare a document (as a supplement to the present ”standing instructions” concerning the sampling and the laboratory work) on the overall technical approach and on the way the collected data may contribute to a better knowledge of the problems and to the development of the future management tools.

The activities should be prepared in collaboration with the national counterparts in order to guarantee that:

1. *the approach followed by the project is clearly understood by the key persons of the levels in question:*

   Fieldwork → Data compilation → Assessment/Evaluation → Management

2. *the local knowledge is not neglected but is used in an optimum way;*
3. *the scientific approach itself is transferred to the involved national institutions.*

One of the essential objectives of the project is to create a regional collaboration framework between the riparian countries of the Lake Tanganyika. It is desirable that the terms for such a collaboration are tried out as soon as possible during the project phase and taking advantage of the resources granted by UNDP/GEF.

However, the evaluation mission has noticed the unsatisfactory communication between the national teams working on the same study themes in the four countries. The following priority recommendation (no. 17) completes the priority recommendation No. 6 concerning the possible intervention of the national experts in other countries than their own, aiming at a better appropriation of the project methods and results by the nationals.

Priority recommendation No. 17: Prepare and implement before the end of the project sustainable mechanisms/procedures for professional exchanges between the national experts in order to meet from now on the future needs for exchange of information, of experiences and of continuous harmonisation.

As a supplement to these general aspects of the special studies, the evaluation mission has paid attention to each component of the special studies supposing that the scheduling of the results and consequently of the project activities was put back in a logical order.

For each theme of the special studies the evaluation mission has examined the following questions:

1. their justification (rationale);
2. the pursued goals, the methodology; etc.;
3. the present state of works;
4. the special points (methodological; scientific or technical) resulting in findings and/or recommendations.

These different questions are analysed in the body report for each component of the special studies (§ 3.3.3).

5. External factors bearing on the implementation of the project.

As mentioned in the introduction there are some external factors which are seriously influencing the fulfilment of the project activities.

Firstly, the events in Burundi have had three effects:

a) The impossibility of carrying out the activities normally during the first years of the project because of the insecure situation of the country. The country is still under the impact of a curfew

but the evaluation mission has noticed that the present situation allows the project activities (located next to the Lake) to be carried out normally since the summer 1998. Furthermore, the Scientific liaison officer of the project is presently based in Bujumbura. In this connection, the evaluation mission points out that if the security conditions in Bujumbura allows the Scientific liaison officer to carry out his activities in a normal way, this should also be possible for the Project Coordination Unit (PCU).

b) The transfer of the project head office to Dar es Salaam has had the effect of removing the Project Coordination Unit more than 1000 km away from the Lake which has not made the communication between the PCU and the field teams easier.

c) An embargo has struck the country since 1996 (it has been cancelled in January 1999 and the internal situation is improving).

Priority recommendation No. 18: In accordance with the decision of the Project Steering Committee concerning the transfer of the project head office to Dar es Salaam, the evaluation mission recommends that the project head office is moved back to Bujumbura as soon as the two conditions, which make it possible, have been fulfilled: lifting of the curfew and of the embargo.

Secondly, the civil war in Zaire (today the Democratic Republic of Congo), has been concentrated primarily to the Great Lakes region and has consequently prevented the normal carrying out of the project activities on the Congolese shore of the Lake. In spite of the pillage of their installations and of the risks they were running, the scientists of the CHR of Uvira have performed feats to bring certain activities to a successful conclusion. At the time of the evaluation mission, the situation is still insecure but there are hopes of a normalisation in the near future. The high level of involvement of the Congolese scientists makes believe that by that time the activities will be able to start at a rapid rate.

Priority recommendation No. 19: The Project Coordination Unit should already now start preparing the scenarios concerning the restarting of the activities in D.R.Congo. Since the human resources are already in place, the PCU should pay a special attention to the procedures of a rapid transportation and installation of the necessary logistics in Uvira.

Thirdly, the evaluation mission draws the attention of the project parties (the beneficiary countries, UNDP/GEF and UNOPS) to the particular problem of Rwanda. This country occupies a part of the Lake catchment and is, in that capacity, concerned by the project objectives. Originally, Rwanda was not associated since the view of the authors of the project was focused on the Lake biodiversity and not on the management of the Lake within its basin.

If the present concepts and principles for integrated water resources management are respected (see annex 7), then the need to associate Rwanda is obvious. As Rwanda is, however, not a riparian of the Lake, it cannot have the same degree of involvement in the management of its resources. But its position in the basin imposes the country a certain responsibility for the conservation of the Lake. So, either the present activities in the Rwandan part of the basin

(deforestation, erosion, pollution ?) have a confirmed impact, which would justify its immediate association, or these activities might require, one day or another, a cooperation with Rwanda and in this second case it would be advantageous to establish the basis for such a cooperation without delay by associating Rwanda with the project immediately (in a form which still needs to be defined and which takes into account the particular position of this country).

Since Rwanda sank into chaos in 1994, one year before the official start of the project, the question of its participation never occurred. Today, the internal situation of the country is being normalised and it is therefore legitimate to ask the question of Rwanda's role in the project.

Priority recommendation No. 20: The evaluation mission recommends that the Rwandan government is invited to participate, as observer, in the next meeting of the Project Steering Committee and that the practical details in connection with its association with the project is put on the agenda for this meeting.

Priority recommendation No. 21: Considering the present state of progress of the project and the necessary time for these recommendations to give the expected effects and considering its experience with projects of this scope, the evaluation mission estimates that it is necessary to prolong the project period by approximately one and a half year, postponing the date of completion to December 31, 2001 in stead of July 31, 2000 as originally anticipated.

This prolongation should be made within the limits of the available budget.

For that purpose the Project Coordination Unit should submit to the Project Steering Committee a new working plan and a revised budget which comply with the new deadlines and follow the direction of the above mentioned recommendations.

6. Lessons learned from the project

The evaluation mission has tried hard to deduce the general observations which might be useful for other GEF projects.

In the first place, the evaluation mission has noticed – and all the consulted parties have agreed on this point – that the origin of certain problems is to be found in the insufficiency of the project document. The defects picked out by the evaluation mission are of different natures and are reviewed in the body report; it would therefore be tedious to resume them here. Let us just say, in order to simplify things, that the "good" intentions are not enough to make a "good" project document and that the "set-up" of such a project deserves a very careful examination of every line of the Prodoc. It is a pity that the deficiencies were not noticed during the instruction of the dossier before the project was adopted.

GEF should make sure that the project formulations respect the standards of the executive agents (in this case UNDP) and that a description of the activities is elaborated with a logic scheduling and in sufficient details to make an implementation possible.

General recommendation: It is essential that the Prodoc format is respected, not only in its form but also in its logic. The executive agents of the GEF (in this case UNDP) should make sure that the document is realistic and operational.

The evaluation mission has also noticed that certain problems can be attributed to the insufficient communication between the executive agency and the beneficiary countries. The proposal from the NRI Consortium is very different from the Prodoc which can easily be explained by the bad quality of the latter. Such differences should have alerted UNDP and UNOPS and should have given rise to a consultation of the beneficiary countries. As the proposal of the NRI Consortium is an integrated part of the contract, it should – as a minimum – have been communicated to the beneficiary countries in order to allow them to appropriate the new project formulation.

General recommendation: The contract documents describing the substance of the project should be communicated to all the parties to the project, particularly to the beneficiary governments.

Another important lesson to draw from this project is that UNOPS as well as UNDP/GEF and the Project Steering Committee as a whole, suffer from their lack of vigilance at the time where the project started to drift. The process of elaborating the SAP has been ratified even though this process (which was adopted to produce some results in spite of the delays of the special studies ?) was not the one that was envisaged by the Prodoc, it had no scientific foundation and was far to be logical.

General recommendation: The follow-up of the implementation is essential for the success of a project. The contract documents (first of all the Prodoc) should stipulate a number of objectively verifiable indicators allowing to make sure that the project is progressing according to the schedule.

Without implicating the procedures of the international call for tenders or the capacities of the consulting companies of the developed countries to run a project of this scope, the evaluation mission deplores that the choice of contractor did not take into account the executive arrangements with the beneficiary countries. The contractor was chosen on the basis of their interpretation of the Prodoc without defining the roles of the national institutions and without specifying the practical details for mobilising the national human resources, nor taking them into account in the process of going through the tenders.

Consequently, the project could not start immediately after the signature of the contract as the national teams had not yet been formed around the contractor. It took a long time (in some cases

more than two years) to identify and recruit the national experts that are working on the project today.

The evaluation mission is aware of the fact that the doctrine in this field has developed during the past years and that the same procedures are not applied today concerning the choice of contractor. Nonetheless, a special attention should be paid to the mobilisation of local resources when it comes to projects concerning institutional strengthening and capacity building.

General recommendation: Projects concerning capacity building, like this one, should rely on a preliminary evaluation:

1. **of the mandates of the national institutions;**
2. **of the local human resources**

The evaluation should be included in the Prodoc and serve as basis for the mobilisation of national operators.

In case of international call for tenders, the choice of contractor must take into account its capacities to mobilise around his own expertise the national institutions and experts who are capable of taking in hand the results of the project at its completion.

Finally, in order to avoid any rupture at the end of the project, the evaluation mission finds that it would be judicious to plan a follow-up phase (for a period at least corresponding to the project period but handled by the national counterparts) during which the results of the project could be tested. If such a follow-up procedure is accepted beforehand by the beneficiary countries, it would be a guarantee for their engagement to implement the project results.

General recommendation: Projects concerning institutional strengthening, like this one, should include a period for follow-up of the results, handled by the beneficiary countries and intended to test the structures and the procedures inherited from the project. During this period, the executive agent from the GEF (in this case UNDP) should continue to make a reduced monitoring in close collaboration with the involved governments.

1. INTRODUCTION

1. According to the UNDP/GEF rules and to provisions of the Project Document (Prodoc), the GEF Unit within the UNDP Regional Bureau for Africa has decided to make the mid-term evaluation of the project RAF/92/G32 "Pollution control and other measures to protect biodiversity in Lake Tanganyika" (in abbreviated form the Lake Tanganyika Biodiversity Project or LTBP). Two independent consultants[5] have been asked to carry out this mid-term evaluation (hereafter called the evaluation mission).

2. The official starting date of the project implementation is July 31, 1995, where the contract was signed by the United Nations Office for Project Services (hereafter called UNOPS), acting as executing agency, and the NRI-MRAG-IFE Consortium (hereafter called the NRI Consortium), acting as implementing agency. As the project was planned to take 5 years, the mid-term evaluation should have been carried out in February 1998. However, considering the delays in the implementation of most of the activities and also because of the disturbances in the region, the evaluation mission has been organised in November 1998, that is 3 years and 3 months after the start of the project.

3. According to the UNDP/GEF rules and to the provisions of the Prodoc (section H, page 37) the mid-term evaluation will be followed by a final evaluation planned to be carried out 4 months before the end of the project.

4. The expected and achieved results of the evaluation mission are the following:

- An evaluation report (the present report) analysing the present state of the project implementation and deducing the positive aspects of the project progresses, the difficulties which the project has come up against, the possible improvements of the project design and implementation as well as the recommendation concerning a better execution/implementation until the end of the project.
- The evaluation mission should also act as capacity building tool for the principal parties involved in the project, particularly the national/local institutions, trying to improve the approach and the methodology of the Project Coordination Unit (PCU). These functions have been carried out by means of information and explications given to the project operators by the evaluation mission concerning the guiding principles for management of the fresh water resources[6].
- Throughout the meetings with the scientific project operators the evaluation mission has discussed the methods and procedures applied by the project teams and has given its

[5] Dr. Gérard Cougny and Mr. Niels Ipsen from VKI – Institute for the Water Environment, a non profit organisation under the Danish Academy of Technical Sciences.

[6] As set out in Agenda 21, chapter 18 (freshwater resources management and protection) and as enriched by the global experience in integrated water resoruces strategic action planning (e.g. experience in Uganda, Vietnam, Nicaragua, Burkina Faso, SADC Protocol on shared water courses, new international conventions in the matter, etc.) and as formalised by doctrines and approaches of the Global Water Partnership (GWP).

opinion on the most pertinent scientific and technical methods to achieve the objectives of the scientific special studies (SSS).

- Furthermore, the evaluation mission has had several consultations with the national coordinators of the hosting countries in order to improve the anchoring of the project in the national institutions and to make the implementation fit better with the national environmental policies and the national institutional and legislative frameworks.
- Finally, before leaving the evaluation mission gave a restitution of its findings and recommendations to the national project coordinators of each country as well as to the local UNDP office of the last visited country (Lusaka, Zambia, November 27, 1998).

1. The main purpose of the evaluation is prospective rather than retrospective. Based on the present state of the project, the main objective is to make recommendations aiming at a better implementation of the project (if necessary and if possible) in order to make sure that the project will reach its final objective (protection of the biodiversity of the Lake Tanganyika) through its development objective (establishing a joint management of the Lake) and its immediate objectives.

2. When arriving in the field, the evaluation mission has found that the working plan followed by the NRI Consortium (implementing agency) was quite different from the one mentioned in the original project document. Actually, the change in objectives, outputs, and activities of the project from the formulation in the Prodoc until the present approach is due to internal and external factors as mentioned below (see section 3.1.4).

3. Once the evaluation mission had understood the present logical framework of the project, and in order to provide the correspondence to the terms of reference, it was decided to consider the present state of the project from five points of view:

a) The history of the project and the evolution of its design and logical framework compared to the development, at a world-wide level, of concepts, principles and directives concerning water management;
b) The present state of implementation of the activities;
c) The ownership of the project objectives, outputs and activities by the host countries;
d) The pertinence of the scientific studies compared to the current objectives;
e) The external factors bearing on the project (for instance political situation, insecurity...).

1. Before travelling to the region the members of the evaluation mission have gained knowledge of the project through a number of pertinent documents. These documents are mentioned in the section VII of the Terms of Reference (Annex 1).

2. Furthermore, the Head of the evaluation mission has had a briefing meeting (by phone) with Dr. John Hough, Coordinator for Biodiversity and International Waters of the GEF Unit, Regional Bureau for Africa, UNDP Headquarters in New York. The Head of the evaluation mission has also met Mr. Pierre Jullien, previous PMO (Project Management Officer), presently based at the Regional Office of UNOPS in Abidjan. Throughout the evaluation, the members of the mission have been in current contact with Dr. John Hough and Ms. Karin Svadlenak-Gomez, Project Management Officer at the headquarters of UNOPS (New York).

3. As required in the ToR, the evaluation mission has had consultations with the Project national coordinators (NPCs) in each visited country (including the national coordinator of the D.R.Congo met in Lusaka). As far as possible, the evaluation mission has discussed its findings/recommendations with the NPCs before leaving Lusaka.

4. The evaluation mission has had a first briefing with the Programme Officer of the local UNDP Office in Dar es Salaam (project headquarters) and has also had some consultations with the Programme Officers of the local UNDP Offices in each of the visited countries. Finally, the evaluation mission has had a last debriefing with the Programme Officer of UNDP local office in Lusaka.

5. Throughout the evaluation, the mission has had meetings with the NRI Consortium's experts permanently or temporarily present in the field.

6. As far as possible, the evaluation mission has had consultations with the national officials and with the other actors (NGOs, individuals) who are not directly involved in the project but nevertheless affected by its implementation and/or results.

7. The present report consists of 5 sections and 7 annexes:

- The present section 1 (Introduction).
- Section 2 (The project and its development context) presents the Lake Tanganyika, the origin of the project and the practical details of its preparation and approbation by the four governments, UNDP and UNOPS. The main characteristics of the beneficiary countries are specified as well as the other projects, terminated or ongoing, which may be of interest for the project.
- Section 3 (Findings and conclusions) presents the results of the analyses made by the evaluation mission based on the following: (i) meetings with the project managers and project operators; (ii) documents from the four governments involved in the project (environmental policies, NEAP, water management policies, etc.); (iii) documents from UNDP, UNOPS and GEF (Prodoc, contracts, Cooperation frameworks of the countries, etc.); (iv) project documents (various scientific, technical, administrative and financial reports); (v) documents from other sources (particularly doctrinal documents concerning the integrated management of water resources, action plans of the water sector and strategies concerning nature preservation in Eastern and Southern Africa).
- Section 4 (Recommendations) synthesises the findings and conclusions in a general table of operational recommendations describing succinctly: (a) the recommendation itself emphasising the priority recommendations repeated in the executive summary; (b) to whom the recommendation is addressed; (c) comments, if any; (d) the corresponding section in the report giving details of the previous elements.
- Section 5 (Lessons learned from the project) endeavours – in the spirit of the "GEF Project Lessons" – to deduce the general recommendations that might be useful to the GEF in other projects or in the development of its general policy.
- The annexes are the following:

  Annex 1: Terms of Reference of the evaluation mission

Annex 2: Itinerary of the mission (actual)

Annex 3: List of interviewed persons

Annex 4: Summary of field visits

Annex 5: List of consulted documents

Annex 6: Genesis of the project

Annex 7: Integrated water resources management and planning

Table 1: Correspondence between the ToR and the plan of the evaluation report

Questions raised in the terms of reference	**Sections**
2.1 Review and assess the appropriateness of the idea project's concept and design, the project's effectiveness in realising its five objectives[7] and the extent to which they have contributed toward the overall development objective.	§ 3 in its entirety
If deemed necessary, the mission will comment on the relevance of the project objectives and activities and any other conceptual issue that might improve the project execution.	§ 3.1
2.2 Review and assess the efficiency and adequacy of implementation arrangements and management of the project	§ 3.1 (in part) and § 3.2
Review the quality and timeliness of inputs and activities by the implementing sub-contractor, NRI, e.g. responsiveness of project management to changes in the project environment, work plans and budgets are prepared and followed, etc.	§ 3.2 and § 3.3
Review the UNOPS execution modality of the project: evaluate UNOPS involvement in the project. The execution modality in terms of effectiveness and impact should be assessed, and the evaluation team should make suggestions on what is necessary to achieve effective project execution.	§ 3.2.2
2.3 Review the results of the project.	§ 3.3
List the achievements of the project and assess their effectiveness in solving the perceived problems and limitations;	§ 3.3
Examine whether the institutional set-up through the Regional Steering Committee and the National Steering Committees and Working Groups enhance full involvement of the countries and provide a sense of actual ownership by the countries (if not, what mechanisms might be used to accomplish this);	§ 3.1.5 § 3.2.6
Assess whether the project is producing its outputs effectively and efficiently: identify the major factors which have facilitated or impeded the progress of the project in achieving its desired results;	§ 3.2 and § 3.3
Assess project impact: Determine the effect of the project on targets groups or institutions: the quality, usefulness and sustainability of the projects achievements and outputs in terms of improving the participating countries' capacity for a sustainable management of Lake Tanganyika;	§ 3.3.4.3
Determine the degree of support given by the riparian Governments in integrating the project objectives and goals into the national development programmes and other related projects, and how well the project fits into national development policy;	§ 2.2 and § 3.2.6
Assess whether Government inputs in the four countries, at national and local levels, were sufficient and how they should be improved. The contribution of UNDP country offices to the project should also be reviewed.	§ 3.2.5
2.4 Review the special difficulties faced by the project.	§ 3.2

[7] The evaluation mission points out that the project has six objectives (see § 3.1.4).

Questions raised in the terms of reference	Sections
Assess the extent to which the political and civil difficulties within the region have impacted project operations, both in terms of implementation and management of the project, and in terms of project impact. Assess the extent to which these difficulties have limited the achievement of the project objectives.	§ 3.2.9

Table 1 (cont'd.): Correspondence between the ToR and the plan of the evaluation report

Questions raised in the terms of reference	Sections
Evaluate the alternative courses of action available including, but not limited to: – closing down the project – limiting project operations to certain countries – continuing as at present.	§ 3.3.7 and § 4
2.5 Review the effectiveness of the indicators put in place by the project, vis-à-vis of the objectives, the outputs and activities, including objectivity, measurability, methodology of analysis to determine the effect and the impact of the project, etc. The mission will make recommendations to improve them if necessary.	§ 3.1.4.2
2.6/3.0 Recommended future directions. Based on all the above points, the evaluation mission should provide conclusions and recommendations.	§ 4 and § 5
The mission should record, in conclusion, any significant lessons that can be drawn from the experience of the project and its results, especially anything that has worked well, as well as anything that has worked badly and should be avoided in the future.	§ 4 and § 5
3.1 Make general recommendations on the execution of the project and the ways to attain the project objectives upon completion.	§ 4
3.2 In accordance with the general recommendations, make specific recommendations on the future course of intervention of the project.	§ 4
3.3 Make recommendations on how to strengthen the achievements of the project.	§ 4

2.

THE PROJECT AND ITS DEVELOPMENT CONTEXT

1. Since the first concept of the project in 1991, water resources problems have attracted increasing attention from the authorities and communities in Southern and Eastern Africa and more generally throughout the world. A number of initiatives have been taken at all levels and concepts for improved management of water resources have been or are still being developed.

2. Thus, the anticipated results of the Lake Tanganyika project, making it possible to achieve the development objective, would, today, be seen as natural components of an integrated water resources management (IWRM) strategy based on internationally and regionally acknowledged principles.

3. The present section presents the Lake Tanganyika and the riparian countries and recalls the main stages of the project genesis. It presents the most important recent developments and the present global and regional context for management of river and lake basins. Annex 7 describes the principal elements for modern water resources management (which the evaluation mission has endeavoured to deduce from the ongoing conceptual discussions) in order to inspire the further implementation of the project.

2.1 The Lake Tanganyika

1. The Lake Tanganyika is located between latitude 3°20' and 8°50' south and between longitude 29° and 31°30' east. It has a length of more than 670 km. Its average width is 48 km. The surface of the Lake is around 33,000 km2 and the average depth is close to 700 meters. With a volume of almost 19.000 km3 the Lake is one of the largest fresh water stock in the world (see figures 1 and 2).

2. The most remarkable characteristic of the Lake is its biodiversity. This Lake has the largest biodiversity of all the lakes on Earth (vertebrates, invertebrates and plants combined). It contains more than 1300 species of fish, invertebrates and plants among which 500 species do not exist anywhere else (endemic species). There are at least 300 species of fish (new species are constantly discovered) among which two thirds are peculiar to the Lake. Several of these species and their genera do not have close relatives outside the Lake basin due to its long and complex history. The complex ecosystem of the Lake in terms of number of species as well as in terms of their complex interactions is without any doubt unique in the world.

3. The Lake Tanganyika is also a vital water resource for the riparian countries and for the Central and Eastern Africa regions. It plays a key role in the economic activity of the region, producing approximately 100 000 tonnes of fish. Fish constitutes the principal source of protein in the region. The Lake also constitutes the basis of an impressive fish exportation industry for the four countries. Furthermore, it is an irreplaceable fresh water resource for the local populations. Less than one million persons are living in the immediate vicinity of the Lake but almost 12 million persons are living on its side basin. Finally, the Lake is an essential transport

link for the four bordering countries. The Lake is a centre for tourism (particularly for nature discovering) and, potentially, a centre for spare time water activities (swimming, sailing…).

Figure 1: Characteristics of the Lake Tanganyika

Maximum length: 673 km
Width: 48 km
Surface: 32 900 km^2
Maximum depth: 1435 meters
Average depth: 700 meters
Volume: 18 940 km^3

Figure 2: The riparian countries and the coastal towns of the Lake Tanganyika

2.2

The riparian countries

1. The Lake Tanganyika is surrounded by four countries: the Republic of Burundi, the Democratic Republic of Congo, the United Republic of Tanzania, and the Republic of Zambia. These riparian countries are in different degrees of development but all four have a low human development index (HDI). According to the latest UNDP world report they are occupying places from number 143 to number 170 out of 174 countries. The following table 2 recalls the main physical and socio-economic characteristics of the riparian countries. Information on human development, institutional framework, and environmental policy for each of the countries could be find in the political documents and plans established by the governments and within the UNDP country cooperation frameworks (CCF).

2. Rwanda holds a special position. This country is not a riparian of the Lake and is therefore not directly affected by its exploitation or its conservation. However, part of the Lake basin is on the territory of Rwanda. In that capacity, the Lake is affected by the development activities and the land uses in this part of Rwanda that have (or might have) a direct influence on the Lake. The specific problem of Rwanda is discussed in § 3.1.7.

3. The four riparian countries have proved – through their environmental policy documents as well as through the meetings granted to the evaluation mission by the high-ranking officials of these countries – that they are giving high priority to the development of an overall programme for the Lake Tanganyika.

4. The Lake is bordered by three national parks:

- the Rusizi River National Park (9,000 ha.) in Burundi;
- the Gombe River National Park (*** ha.) and the Mahale Mountains National Park (*** ha.) in Tanzania;
- the Sumbu National Park (*** ha.) in Zambia

There is no protected area on the Congolese shore.

Nor is there any protected underwater area in the Lake.

Table 2 : Main characteristics of the riparian countries of the Lake Tanganyika

Characteristics	Burundi	D.R.Congo	Tanzania	Zambia
Surface (sq. km)	25 680	2 267 050	883 590	743 390
Population (1995 WWF)	6 393 000	43 901 000	29 685 000	9 456 000
Density (inhab./sq. km)	248.9	19.4	33.6	12.7
Demographic growth rate (%: 1970-1995 / 1995-2015)	2.2 / 2.6	3.3 / 2.9	3.2 / 2.6	2.7 / 2.5
Urban population (% of total/ 1970 / 1995 / 2015)	2 / 8 / 15	30 / 29 / 39	7 / 24 / 38	30 / 43 / 52
Urban pop. growth rate (%: 1970-1995 / 1995-2015)	7.0 / 6.0	3.1 / 4.6	8.6 / 5.0	4.1 / 3.4
Principal urban centre	Bujumbura	Kinshasa	Dares Salaam	Lusaka
Population of the principal urban centre (1995)	***	4 241 000	1 747 000	1 317 000
Average economic growth rate 1960-1995	1.1	– 2.0	0.4	– 1.3
Public aid to development (USD/inhab. 1996)	33	4	30	68
Working population (% of total population)	53	42	51	41
Work incomes sharing 1995 (% men / women)	57.7 / 42.3	63.7 / 36.4	52.7 / 47.3	60.7 / 39.3
Access to information (radio/TV per 1000 inhab. 1995)	68 / 7	98 / 41	276 / 16	99 / 64
Food production index per inhab. (basis 100 in 1980)	81	84	80	97
Human development				
Life expectancy at birth (years, 1995)	44.5	52.4	50.6	42.7
Rate of alphabetisation of adults (%, 1995)	35.3	77.3	67.8	78.2
Raw rate of scholarship (%)	(e) 23	(e) 41	33	(e) 52
GNI per inhabitant 1995 (Parity, USD)	637	(e) 355	636	986
UNDP Human Development Index 1995 (maxi = 1)	0.241	0.383	0.358	0.378
HDI Rating (among 174 countries)	170	143	150	146
Environment, water, energy				
Cultivated lands (% of total surface, 1991)	52.8	3.5	4.0	7.1
Permanent grasslands*** (% of total surface, 1991-93)	35.6	6.6	39.6	40.4
Forests and woodlands (% of total surface, 1995)	3.3	76.7	37.9	38.6
Annual rate of deforestation (% 1990-1995)	0.4	0.7	1.0	0.8
(Number) and surface (km^2) of protected areas (Cat I-V)	(3) 89 0	(8) 99 170	(31) 139 360	(21) 63 640
Population having access to drinking water (%)	52	42	38	27
Access to drinking water (% urban /rural)	92 / 49	37 / 23	75 / 46	64 / 27
Internal water resources (m^3/inhab. 1998)	546	19001	2485	9229
Fresh water withdrawal (% of resources)	2.8	(.)	1.5	2.1
Net import of com. energy (% of total consump. 1994)	98	1	92	32
Fuelwood in domestic consumption (% 1990)	77	94	89	86
Other features				
Lake Tanganyika surface (sq. km / %)				
Lake Tanganyika shoreline (km / %)				
First urban centre on the Lake Tanganyika	Bujumbura	***	Kigoma	Mpulungu
Population	(e) ***	(e) ***	(e) ***	(e) ***

Sources: UNDP Global report on Human Development 1998 and WWF; (e) = estimated

2.3 Genesis of the project

1. It appears from the section 3 (Findings and conclusions) that one of the principal aspects of the project is the evolution of its design and structure. The formulation of the Prodoc – which ought to be the reference for the project implementation – is not very well situated between the fundamental scientific approaches and the operational approaches. It is therefore particularly important to analyse the genesis of the project in order to find out what were the original ideas and how did they develop into the present situation.

2. The project, as it appears today, is the result of a long process that started in 1989. Before 1989 various scientific works had been carried out on the Lake Tanganyika (primarily in the field of hydrology and fishing). The synthesis of all the scientific works concerning the Lake (described as being activity No. 1.1.1 in the Prodoc, page 25) should have been elaborated during the first year of the project implementation. Unfortunately, this synthesis has still not been made at the time of the evaluation. The only available syntheses concern the data sources but not the data themselves (see section 3.3.3 Baseline studies).

3. From November 29 to December 2nd, 1989, the International Symposium on Resource Use and Conservation of the Great African Lakes was held at the Faculty of Sciences, University of Burundi in Bujumbura. This meeting resulted in a certain number of recommendations that form the basis of the present project (see annex 6.1).

4. In 1991, the International Conference on the Conservation of Lake Tanganyika was held in Bujumbura. On this occasion, it was declared for the first time that the excessive fishing, the pollution and the sedimentation represented the most important threats to the Lake (without proving it, however, as for pollution and sedimentation). The recommendations resulting from this conference became the basis for a joint action of the countries situated in the basin (see annex 6.2). The main recommendations were as follows:

- Create a Commission for the Lake Tanganyika basin;
- Carry out studies on the interactions between lands and Lake;
- Develop and manage underwater reserves;
- Carry out research studies concerning the conservation of the Lake;
- Study the relations between the development of fisheries and the conservation of the basic resources of the Lake.

5. In 1992 (April or May?), during the workshop held at the University of Kuopio (Finland) on the FAO/Finnida LTR (Lake Tanganyika Research) project, the concept of the GEF project was discussed by Andrew Cohen (University of Arizona), Gaspard Ntakimazi (representative of Burundi), the Chief Education Officer of the University of Kuopio (originator of the LTR project) and a representative of the GEF. On this occasion the first concept of the project was written and sent to the GEF unit within the UNDP Regional Bureau for Africa (UNDP/GEF/RBA Unit).

6. In 1992, during the meeting of the GEF participant countries in Abidjan (December 3-5), the project was officially accepted as part of the second tranche of the GEF pilot phase, with a

financing of 10 million USD (see annex 6.3). The 1992 Project Brief (not reproduced here) stipulates the fundamental elements of the project design. The main threats are identified as:

- Pollution (it is emphasised that the impact of the polluting loads is still uncertain);
- Deforestation and excessive discharge of sediments, which is supposed to be the reason for significantly reduced levels of fish and invertebrates in the northern part of the Lake;
- Excessive fishing (three of the predatory species have shown a pronounced decrease in population since the fifties).

7. The 1992 Project Brief stipulates that the immediate establishment of a Lakewide conservation scheme with GEF support is critical for ensuring a long term viability of the Lake as both a biotic and economic resource. Being part of the GEF pilot phase, the role of the project is emphasised. This document is not structured in objectives, outputs and activities. The activities to be financed by the GEF are described as follows:

- Local management framework;
- Water pollution monitoring and control;
- Biodiversity surveys, monitoring and maintenance;
- Training and education;
- Enhancement of capacities to monitor pollution and biodiversity;
- Addressing underlying constraints to Lake conservation;
- Development of a Lake Tanganyika Environmental Trust;
- Institutional arrangements.

8. 1993-1994: The establishment of the Prodoc is based on a new Project Brief dated from September 13, 1993 (see annex 6.4). It is said that the overall goal of the project is to develop an effective regional approach to control pollution and to prevent loss of the exceptional biodiversity of Lake Tanganyika. The six objectives of the project are indicated as follows:

9. Establish a regional long term management program for pollution control, conservation and maintenance of biodiversity;
10. Formulate a regional legal framework for cooperative management of the Lake environment;
11. Establish a programme of environmental education and training for lakeside communities and environmental scientists;
12. Establish a tested mechanism for regional coordination in conservation management of the Lake Tanganyika basin;
13. Develop a ”strategic plan” for the long term management of the Lake based on a better understanding of the ecosystem functioning, the impact of pollution on the system, and improved knowledge of its biodiversity;
14. Implement sustainable pollution monitoring programme and conservation area management plans.

15. In the 1993 Project Brief the activities are not organised in correspondence with the six objectives. They are presented as follows:

- Strategic plan
- Review of legislation
- Environmental awareness and education
- Regional coordination
- Sediment and chemical pollution control studies
- Fishing practices
- Patterns and structure of biodiversity
- Underwater reserves
- Long-term monitoring

16. During the preparatory assistance phase the Prodoc was written by the project formulation mission[8]. In 1994 the Prodoc was signed (date ?) by the four countries, UNDP and UNOPS.

17. At the end of 1994 and the beginning of 1995 the process of the international call for tenders and the studying of the submissions was launched, resulting in the selection of the NRI Consortium as the implementing agency of the project. The contract between UNOPS and the NRI Consortium was signed on July 31, 1995, which is the official starting date of the project implementation. It should be noticed that this contract has been concluded based on the proposal of NRI and not based on the Prodoc.

18. Actually, the contract between UNOPS and the NRI Consortium stipulates the order of precedence between the different reference documents as follows:

a) the contract (letter of 31st July 1995);
b) the statement of work (attached to the contract as Annex II);
c) the contractor technical proposal (dated 14 Feb 1995) as clarified by the agreed minutes of the negotiation meeting dated 26 May 1995 (both constituting Annex III);
d) the contractor financial proposal (dated 14 Feb 1995) as clarified by the Contractor's fax to UNOPS of 20 April 1995, and as further revised in the Contractor's fax messages to UNOPS of 26 July 1995 and 31 July 1995 (Annex IV);
e) the Project Document (Annex V).

1. It should be emphasised that the technical proposal of the contractor differs considerably from the Prodoc. Nevertheless, neither the contract, nor the technical and financial proposals of the contractor or the clarification documents have been passed on to the beneficiary countries. Consequently, the reference documents are not the same for UNOPS and the NRI Consortium on one side and for the four beneficiary countries on the other side. Concerning the substantial activities, UNOPS and the NRI Consortium refer primarily to the NRI technical proposal while the four countries refer to the Prodoc. This situation is, of course, detrimental to a good understanding between the different institutional operators of the project.

[8] According to the information obtained by the evaluation mission, the team that was responsible for writing the Prodoc did not include specialists in integrated catchment management.

2. During the Inception Workshop (held in Dar es Salaam in March 1996), the project objectives, outputs and activities were reorganised. The Inception Report was not completed until long after the workshop (the report dates back to January 1997 but according to the representatives of the countries it was not distributed until much later).

3. From July 31, 1995 until today – before as well as after the Inception Workshop – the design of the project has changed continuously according to: (i) the difficulties met by the project; (ii) the changes in strategies due to internal reasons (see § 3.1.3: *The logical framework and its evolution from the origin till the present situation*).

4. Finally, at the time of the evaluation mission (November 1998), we are faced with six different versions of the project design:

5) The activities described in the 1992 Project Brief;

6) The objectives and activities described in the 1993 Project Brief;

7) The objectives, outputs, and activities, as described in the Prodoc (1994);

8) The objectives, outputs, and activities, as described in the NRI Consortium bid (1995);

9) The objectives, outputs, and activities, as described in the Inception Report (1997);

10) The objectives, outputs, and activities, as implemented today (November 1998).

The tables of § 3.1.4.1 set out the differences between these documents, which is one of the main findings of the evaluation mission.

2.4 Other projects relevant for the Lake Tanganyika Project

2.4.1 The FAO/Finnida project GCP/RAF/271/FIN "Research for the management of the fisheries on Lake Tanganyika (= Lake Tanganyika Research, LTR)

1. This project is a large-scale project financed by the Finnish Agency for the International Development and executed by FAO. The project, which has been going on since 1992, associates the four riparian countries of the Lake Tanganyika and includes various research studies and developing elements that are interesting for the UNDP/GEF project, too. As indicated by its full title, the LTR project is concentrated on the fishing problems and its activities in this field are to a large extent overlapping those of the UNDP/GEF project. The headquarters of this project is situated in Bujumbura in the same group of buildings as the UNDP/GEF project office. The LTR project was initiated before the UNDP/GEF project. Its headquarters has been kept in Bujumbura in spite of the socio-political disturbances that have gone through Burundi these last years.

2. After a large haul of results[9], the LTR project is today in its final phase which is planned to last until December 2001 (see figure 3). The content of the second phase (1995-1998) is reproduced on the following page. As can be seen, the objectives, outputs and activities of this

[9] The evaluation mission has visited the library of the LTR project and has been impressed by its "treasures" of study documents on the fishing and the aquatic life of the Lake Tanganyika.

project have several overlapping points with those of the UNDP/GEF project, particularly in the following fields:

- Finalise management plan with, as output "a plan for management of the main commercial fisheries on a mutually agreed, regional basis, for the socio-economic benefit of the four lacustrine states";
- Establish long term monitoring programme;
- Full implementation monitoring programme under national execution;
- Establish Lake wide management institutions; ensure full participation.

3. The importance of the overlapping zones between the two projects has given rise to the question concerning the risk of doing double use and the need for a close coordination between the two implementation teams[10]. These questions were already discussed in 1996. They are described in § 3.3.3.5 (Special studies on the fishing practices) and § 3.3.3.6 (Socio-economical studies and environmental education).

[10] All the more so as several national scientists, particularly in Burundi, are collaborating on both projects.

LTR second phase / Deuxième phase du projet LTR

(George V. Everett & Dora Blessich, LTR Newsletter, No. 16, Dec. 1995; p. 13)

Figure 3: Working plan for the LTR project (October 1998 – December 2001)

2.4.2

Other projects

1. According to the information obtained by the evaluation mission, the project offices in Bujumbura are situated in the former premises of the Belgian project concerning the establishment of the "*Centre Régional de Recherches Hydrobiologiques*" (Regional Centre for Hydrobiology Research) within the framework of the CEPGL (Economic Commission of the Great Lakes Countries). This project, aiming at the establishment of a permanent laboratory, was terminated in 1996. A summary report, which the evaluation mission has not received, has been published. According to the consulted Burundi scientists, the work focussed on systematics.

2. Still according to the information obtained by the evaluation mission, there is a Japanese project in Zambia concerning the fishing sector. The UNDP/GEF project has no relations to this project of which the evaluation mission has no precise information.

2.5 The international and regional water management context

2.5.1 The situation at the international level

1. The international community has acknowledged the severity of the problems incurred by increasing demand, overexploitation of the resources, and deteriorating water quality and has agreed formally to take action to protect the freshwater resources.

2. One of the most clear demonstrations of this was provided by the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, 1992. The main result of the conference was the "Agenda 21" which, in its chapter 18 on *Protection of fresh water resources and their quality*, lays down the key principles and recommendations for sound water resources management. These principles and recommendations were elaborated, matured, and crystallised through a series of preparatory meetings, in particular the Copenhagen Informal Consultation (CIC, 1991) and the International Conference on Water and the Environment (ICWE, 1992) in Dublin.

3. As the protection and sustainable use of water resources was seen as a global problem, the Agenda 21 recommended that all countries elaborate action plans, before the year 2000, in accordance with the adopted principles.

4. Now, six years after the Rio Conference, the experience with the preparation of such integrated and cross-sectoral water action plans is still limited and examples of actual implementation are few. However, during this period, the necessity of seeing water resources management in this new perspective has gained increased awareness among water managers throughout government departments and organisations, and operational tools are being developed.

5. Some developing countries have decided to face the post-Rio challenge and initiated the process of a new approach in water management. This has given rise to substantial developments in this field, for example in Nicaragua, in Vietnam, in South Africa and in Uganda, and more recently in Burkina Faso; country which has associated the other West African countries in its reflections with the support of the Danish Cooperation Agency.

6. In Africa, the National Water Action Plan of Uganda (1993-94) is often quoted since this was the first comprehensive post-Rio planning exercise and also due to the fact that experience from three years of implementation is now available.

7. At the global level, the generally felt need to speed up action after UNCED led to the creation in 1996 of two new and complementary member based structures on the international scene:

- World Water Council (WWC) and,
- Global Water Partnership (GWP)

These two organisations are expected to specifically target sustainable water resources management problems, including the limited technical experience as well as gaps regarding policies and concepts.

1. Thus, the World Water Council (also called "The International Water Policy Think Tank") seeks to develop strategies and policies for sustainable water resources management world wide, whilst the Global Water Partnership concentrates on development and dissemination of operational solutions for water management, donor coordination, networking of water professionals, and information sharing (globally as well as regionally).

2. At the international political level, water has remained top priority. Most recently, in 1997, after the meeting of G7 in Denver, the meeting of the Commission on Sustainable Development (CSD) and after the United Nations General Assembly Special Session (UNGASS) on the environment, the problems concerning freshwater resources were further recognised as one of the crucial problems of the world agenda, and thus water became a key topic at the CSD meeting in 1998.

3. Finally, the United Nations General Assembly adopted and opened for signature the "Convention on the Law of the Non-navigational Uses of International Water Courses" in May 1997. This convention sets a number of obligations and principles for cooperation between states sharing a common water course, i.a.:

- Obligation to cooperate on equitable use based on sustainable and reasonable socio-economic development in riparian countries, preferably through agreements
- Obligation to prevent significant harm to the other water course states
- Obligation to assure free and regular exchange of data and information
- Obligation to inform and consult the other countries on significant planned developments in the basin
- Obligation to protect and preserve ecosystems
- Obligation to cooperate on emergency situations (floods and other natural risks)

2.5.2 Cooperation on water in the SADC region

1. By the entry in 1998 of the Democratic Republic of Congo in the Southern Africa Development Community (SADC), three of the four riparian countries of the Lake Tanganyika – and three of the five countries of the Lake basin – have joined a regional collaboration framework that is presently elaborating directions and directives for a joint management of the shared water courses.

2. The SADC region[11] covers an area of 5.7 million km^2 of which approximately 15% is covered by inland water systems. The water resources of the region comprise fifteen large river basins: Ruvuma, Pungue, Buzi, Save, Zambezi, Limpopo, Incomati, Umbeluzi, Maputo, Orange, Cunene, Cuvelai, Okavango, Zaire and the Nile Rivers as well as some of the largest lakes of the continent, such as Lake Malawi,/Nyassa, an important part of the Lake Tanganyika and part of the Lake Victoria. In addition to these major natural lakes, there are large artificial reservoirs like Kariba and Cahora Bassa on the Zambezi river. Including D.R.Congo, 12 out of the 14 SADC countries share drainage basins with one or more neighbouring countries. Shared watercourse systems yield approximately 70% of the region's water and are therefore the main sources of water. Consequently, there is an increasing competition for controlling these resources among the riparian countries.

3. In response to the increasing needs for a collaborative effort on the management of the region's water resources, the SADC Water Sector Coordination Unit (WSCU) has recently been established (August 1996) as an individual sector with its own Committee of Ministers. The WSCU acts on behalf of the Lesotho Government as secretariat for the Water Sector. There is a technical advisory committee (the SADC Water Resources Technical Committee) which is made up by the heads of water departments/ministries from the member states. This technical committee meets annually to set priorities for the sector activities and approve the work plan of the Project Coordination Unit.

4. The SADC-WSCU has formulated its vision as follows: "To attain the sustainable, integrated planning, development, utilisation and management of water resources that contribute to the attainment of SADC's overall objective of an integrated economy on the basis of balance, equity and mutual benefit for all member States". The objectives are: "To promote cooperation in all water matters in the SADC region for the sustainable and equitable development, utilisation and management of water resources and contribute to the elevation of the quality of life of the people of the SADC region".

5. The Terms of Reference for the SADC-WSCU has recently (February 1997) been approved by the Council of Ministers. They emphasise the role of Unit as a facilitator of the integrated planning, management, development and equitable use of water resources at regional as well as national level. The functions of the SADC-WSCU are specified within areas such as research, preparation and coordination of regional programmes, mobilisation of financial resources, guidance, mediation of conflicts, capacity building etc. A specific task for the Unit is the monitoring of and assistance to the implementation of the SADC Protocol on Shared Water Course Systems, which is of particular interest for the Lake Tanganyika Strategic Action Plan (SAP).

6. The SADC Protocol on Shared Watercourses has until now been signed by 11 of the member states and is soon ratified by the two thirds of the member countries necessary to make it operational. The Protocol sets the framework for utilisation of water courses shared by two or more member states and it emphasises the following principles:

- the right of each member state to utilise shared water courses

[11] These figures have not yet been updated after D.R.Congo became member of SADC

- maintenance of a balance between development and conservation
- collaboration between riparian member states on developments affecting shared water courses
- free exchange of relevant resources information between riparian countries
- equitable exploitation.

Furthermore, the Protocol states a number of specific obligations for the member states on e.g. prevention of pollution, elaboration of impact assessments, prevention of introduction of alien species, notification in emergency situations, etc.

1. At the organisational level, the protocol obliges the members states to establish necessary institutions for implementation of the provisions of the protocol and specifies their general objectives and functions. More specifically, the following institutions are envisaged:

- a Monitoring Unit for the implementation of the Protocol based on SADC-WSCU;
- river/lake basin committees between basin states in respect to each drainage basin
- river authorities or boards in respect to each drainage basin

2. The Protocol on shared watercourse systems is given high priority by the member states as a means of developing sustainable water resources management for the regions scarce water resources and for reducing conflicts concerning the control of these resources. It is in the interests of the states that the Protocol be implemented rapidly and by all member states sharing water resources. The protocol itself does not identify how it should be implemented and there is a number of areas in the region where there is a need for development of practical experience. In response to this, the SADC-WSCU is presently preparing a programme for promotion (and development) of integrated water resources management approaches suitable for the Southern Africa Region as well as a programme for assisting the implementation of the Protocol.

2.5.3 Other regional initiatives in relation to water management

1. Whilst the SADC-WSCU constitutes the formal regional collaboration structure on water, collaboration on water takes place among a number of other organisations having interest in the regional aspects of water and environment. Examples are the regional NGOs such as the World Conservation Union (IUCN ROSA), the Environmental Resource Centre of SARDC (Southern African Research and Documentation Centre), and WWF - Southern Africa.

2. Moreover, in 1996 the Global Water Partnership (GWP) initiated, in consultation with SADC-WSCU, a regional collaboration in Southern Africa which resulted in the establishment of a regional GWP Technical Advisory Committee called "South Africa Technical Advisory Committee" (SA-TAC). The SATAC consists of 12 water professionals from the region. The aim of the SA-TAC is to assist governments and organisations from the region in the promotion of IWRM through identification and networking of expertise and through establishment of close links to the international developments at a global level within the area.

3. The SA-TAC is a member of the GWP regional TAC family, which is being established gradually all over the world. Being the first in Africa, the SA-TAC is already operational whilst a West African TAC is under preparation and interest has been expressed from the East African countries to form a TAC for that region, too.

4. Besides their role as regional facilitators for IWRM, the regional TACs links the regions to the global initiatives such as the World Water Vision exercise (initiated by WWC and GWP jointly) and the global mapping of constraints to IWRM (initiated by GWP) which together should lead to a more efficient allocation of international funds to the water sector.

5. Finally, some very recent initiatives specifically supporting water resources management includes: The establishment of a regional consultancy fund for Southern Africa[12], the establishment of a regional research fund, and the establishment of a regional water resources research network (WaterNet).

3.

[12] A Danida financed fund managed by Institute for Water and Sanitation Development in Harare, Zimbabwe

FINDINGS AND CONCLUSIONS

3.1 Project Concept and Design

3.1.1 General findings

1. The evaluation mission points out that the title of the project ***"Pollution control and other measures to protect biodiversity in Lake Tanganyika"*** must not override the fact that the project is part of the GEF concentration area ***"International Waters"***. Being part of the GEF pilot phase, the project aims to be innovative and demonstrative and is not limited to the objective of conservation of the biodiversity of the Lake. The project aims at a more general objective of joint management of the Lake and its basin by the riparian countries according to terms transposable to other water bodies ant to other countries facing the same kind of problems.

2. The principal results expected from the Lake Tanganyika Biodiversity Project, as stated in 1991, is the elaboration of a regional agreement and an action plan aiming at an environmentally sound management of the Lake. The Strategic Action Plan for the Lake Tanganyika should result in a number of interventions (classified in order of priority) and the establishment of management functions in order to cope with the major threats against the biodiversity of the Lake. These threats have been identified from the origin of the project as being:

a) excessive discharge of sediments from the side basins in the process of deforestation;

b) pollution

c) excessive and destructive fishing

1. The evaluation mission finds that since the origin of the project the operators have focused on the scientific aspects of the supposed threats against the biodiversity. This is illustrated by the fact that in the hierarchy of project objectives, outputs and activities the outputs such as results of special studies are ranked at the same level as the Regional Convention or the Strategic Action Plan although the latter represent the final results (outputs) while the scientific studies are only intermediary activities to achieve such results. Therefore a reorganisation of the objectives and outputs is proposed in § 3.1.8.

2. Because of the focusing on the special studies the aspects concerning the management of international waters, particularly the legislative and institutional components, have been somewhat neglected. Yet, it is the way of management by the riparian countries – correctly described in legislative and institutional terms and supported by a sufficient knowledge of the dynamics of the natural system of the Lake – that should be at the centre of the issues raised by the joint exploitation the Lake Tanganyika international waters.

Priority recommendation: Refocus the project on the GEF concentration area *"International Waters"*

The evaluation mission finds it necessary to refocus the project on the GEF concentration area "International Waters" and more precisely to aim at the joint management of a shared water resource. All the activities and the results of the project should strive for this objective. The results

should be presented in coherence with the use that will be made of them by the policy decision makers and the operators of the future managerial entity of the Lake.

3.1.2 Compliance with the national policies of the beneficiary countries

1. The evaluation mission estimates that the project, through its development objective, is in perfect line with the national policies as far as environment and water resources of the beneficiary countries is concerned, even if the reference documents of these countries (political documents, national environmental action plans) do not explicitly mention the project as one of the essential elements of their initiatives.

2. The evaluation mission points out that the relations which should exist between the project implementation (at regional or international level) and other activities concerning development, environmental protection or water resources management, are not very clearly mentioned in the project activities, nor in the documents or other outputs resulting from the project.

3. In this way, the riparian countries are involved in the LTR project but the formal link between the LTR project and the UNDP/GEF project has not been established. That is why the LTR project, on the one hand, is preparing a regional agreement on the fisheries in Lake Tanganyika, while such an agreement should in fact constitute one of the components of the general agreement of the integrated resources management of the Lake.

4. Likewise, the membership of three out of the four riparian countries of the SADC Protocol on management of shared water course systems is not explicitly taken into consideration in the preparation of the Regional Convention. The Southern Africa Technical Advisory Committee (SA-TAC) initiated by the Global Water Partnership (GWP) has not been consulted.

5. The evaluation mission has had discussions with the highest authorities of the Tanzanian water sector, revealing that these authorities are not very well informed about the project and, vice versa the project does not take into consideration the new orientations of the water policy, in particular the recent decision to progressively pass on to the establishment of basin organisms. The collaboration is limited to the employment by the project of a hydrologist in Gombe to take care of the collection and transmission of data.

6. In brief, the project is in line with the national policies of the beneficiary countries but the compartmentalisation of its activities is detrimental to the potentiality of the efforts and to the synergies supposed to be established to the other activities of the riparian countries as far as water and environment is concerned.

3.1.3 Compliance with the global policies on environment and water resources management

1. All the beneficiary countries of the project have approved the Agenda 21 document resulting from the Rio Conference, in particular chapter 18[13] where it is stipulated among other things that: *"All states, according to their capacity and available resources, and through bilateral or multilateral cooperation, including the United Nations and other relevant organisations as appropriate, could set the following targets:*

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[13] UNCED (June 1992). Agenda 21, Chapter 18. *Protection of fresh water resources and their quality: application of integrated approaches concerning development, management and utilisation of water resources.*, in French. Nations Unies, 1993, pp. 142-161.

a) By the year 2000:

i) To have designed and initiated costed and targeted national action programmes [of development and integrated water resources management) *and have put in place appropriate institutional structures and legal instruments;*

ii) To have established efficient water-use programmes to attain sustainable resource utilization patterns;

b) By the year 2025:

i) To have achieved subsectoral targets of all fresh water programme areas."

Agenda 21 also mentions four important water management principles, repeated from the Dublin Conference and developed in Annex 7.

1. As indicated in § 2.5, the concepts and tools for integrated water resources management have progressed considerably since the Rio Conference, at a global as well as regional level – in particular in the SADC region that includes three of the four riparian countries (D.R.Congo, Tanzania, and Zambia).

2. Yet, the observed development in the project design has not taken into consideration the parallel development of the concepts and principles concerning fresh water resources management as stated in the Copenhagen-Dublin-Rio process and since then developed, particularly in the SADC region. Any approach concerning management of the Lake Tanganyika basin should be developed according to the IWRM principles and the experience accumulated at a global as well as regional level. The evaluation mission finds that this should appear more explicitly in the future approach of the project.

Priority recommendation: Ensure the consistency of the project with the principles for integrated management of water resources and with the pertinent conventions in this field, at a world wide as well as at regional level.

The evaluation mission considers that the project strategies and the expected main results (a regional convention and a strategic action plan) should be based on:

- *the principles for management of water resources as stated in Dublin and Rio (Annex 7);*
- *the SADC protocol on shared water course systems;*
- *the International Convention on the law of the non-navigational uses of international watercourses (1997);*

3.1.4 The logical framework and its evolution from the origin until the present situation

3.1.4.1 Formulation of objectives, outputs and activities

1. The project structure has developed much since the origin. The evaluation mission has listed not less than six different successive versions of the project structure:

- The activities described in the project brief from 1992;
- The objectives and activities described in the project brief from 1993;

- The objectives, outputs and activities as described in the Prodoc (1994);
- The objectives, outputs and activities of the NRI Consortium's proposal (1995);
- The objectives, outputs and activities as revised in the Inception Report (1997);
- The objectives, outputs and activities as implemented presently (November 1998).

A synoptic presentation of the last four versions of the project structure is given in the following tables (table 3, 4, 5, and 6).

Table 3 : Immediate objectives, outputs and activities (Ref.: Prodoc, § D, pp. 25-33, 1994)

IMMED. OBJECTIVE	OUTPUT	ACTIVITIES
1. Establish a regional long-term management program for pollution control, conservation and maintenance of biodiversity in Lake Tanganyika	1.1 All existing relevant data on Lake Tanganyika and its basin reviewed	1.1.1 Review biological, hydrological and water quality information
		1.1.2 Review demographic trends and examine all sectoral plans in agriculture, forestry, industry, urbanisation and fisheries
		1.1.3 Review present capability of host country institutions to identify gaps in equipment and facilities which need to be filled
		1.1.4 Review all legislative aspects and any existing or prospective regulations on pollution control and allowable limits
		1.1.5 Establish early contact with representative lakeside communities as part of a continuing process of dialogue and consultation
	1.2 Inception Report based on all review data (3 to 5 months after the project start)	1.2.1 From all the data assembled all the negative trends among processes influencing the Lake will be characterised and identified
		1.2.2 From all the data assembled all the major gaps in information will be identified
		1.2.3 Compile review data in Inception Report into a computerised database compatible between countries
		1.2.4 Continually updating the database by results from the special studies GIS system for Lake Tanganyika
	1.3 Preliminary Lake Basin Strate-gic Plan (within 5 months of the start of the project)	1.3.1 Dividing the Lake into zones based on use or known conservation value
		1.3.2 Finalise work programs for special studies (see Immediate Objective 5)
		1.3.3 Prepare and initiate four project centres, one each from the host countries around the Lake
		1.3.4 Finalise a list of equipment and services for procurement
		1.3.5 Itemise the future staff needs, in terms of number, discipline and level for trained personnel and draw the training programme
		1.3.6 Carry out (by NGOs) community consultations to determine their reactions and suggestions to the proposed plan
	1.4 Lake Tanganyika Strategic Plan finalised	1.4.1 Selection of areas to be given National Park or other status as conservation areas (+ Nsumbu & Mahali)
		1.4.2 Instigate specific remedial actions to combat pollution problems and identify those requiring international cooperation
		1.4.3 Harmonisation of measures to mitigate pollution and of pollution regulation

		1.4.4 Draw up management measures for zones identified on the Lake
		1.4.5 Draw up a legislative framework enabling these to be implemented in the four countries (see Objective 2)
		1.4.6 The tourism and pollution control considerations may propose new infrastructure requirements (itemised and costed)
		1.4.7 Identify and quantify the major long-term impacts and the most likely points at which those impacts will have their effects
		1.4.8 Discuss with local communities to assess which elements in the plan will be are acceptable, meaningful and practical
		1.4.9 Economic evaluation of costs and benefits of the plan with indications of budgetary requirements
		1.4.10 Produce the final document of the Lake Tanganyika Strategic Plan, following approval by the SC and appropriate ministries

Table 3 (continued) : Immediate objectives, outputs and activities (Ref.: Prodoc, § D, pp. 25-33, 1994)

IMMED. OBJECTIVE	OUTPUT	ACTIVITIES
2. Formulation of a regional legal framework for cooperative management of the Lake environment	2.1. Existing laws and recommen-dations analysed	2.1.1 Review existing laws for the protection of the Lake environment and other existing laws and regulations which impact the Lake
		2.1.2 Identify shortcomings in the implementation and enforcement of existing legislation
		2.1.3 Prepare a comparative analysis for discussion between the 4 countries
		2.1.4 Recommend a basic framework of Lake environment legislation for consideration by the four countries
3. Establish a program-me of environmental education and training for Lake Tanganyika and its basin	3.1 Increased envi-ronmental aware-ness among Lake-side communities	3.1.1 Disseminate information through regular contacts between the NWG, NGOs and communities and appropriate material
		3.1.2 NWG & NGOs will organise teachers groups among local schools, where appropriate ideas and material can be disseminated
		3.1.3 Produce (and refine as the planning process proceeds) specific printed materials for use in communities and schools
	3.2. A cadre of trai-ned environmental scientists and tech-nicians to manage and protect the Lake	3.2.1 Establish an in-service training programme for technical staff to learn skills relating to Lake environmental management
		3.2.2 Provide library and teaching support to the national universities to help them upgrade their programmes
		3.2.3 Provide fellowship support to undergraduate, graduate and post-graduate students and train African women scientists
		3.2.4 Provide on-the-job training for present and new parks managers on the management of the protected areas
4. Establish tested mechanisms for regional coordination in conserva-tion management of the Lake Tanganyika basin	4.1 Mechanisms for regional coordination introduced and developed	4.1.1 Install a communication system, as appropriate, linking the 4 nat. project centres, national coordinators and project vessels
		4.1.2 Organise regular meetings of the SC and the TAC as an integral part of the planning and management processes
		4.1.3 Prepare (+ approve by SC) recommendations to set up a system for coordinated management of the Lake environment
		4.1.4 Prepare and distribute to all concerned a Newsletter in French, English, Kiswahili and any other appropriate local language
		4.1.5 Carry out such other tasks as may be authorised from time to time by the SC

5. In order to produce a full Strategic Plan for long-term application, some specific studies need to be undertaken. These special studies will also add to the understanding of the Lake as a whole and, in some cases, provide the baseline and framework for long-term research and monitoring programmes	5.1 Determination of the biological consequences of sediment discharge	5.1.1 Regular determination of the quantities of sediment brought into the Lake by the major rivers
		5.1.2 Satellite monitoring of lake-wide deforestation to establish the trends of deforestation and sediment discharge
		5.1.3 Detailed analysis of the fate of transported sediment particles discharged into the Lake
		5.1.4 Detailed analysis of the impact of suspended and deposited sediment in the Lake's ecosystem
		5.1.5 Output to be added to Lake Tanganyika database/GIS system (see Activity 1.2.4)
	5.2 Consequences of chemical pollu-tion determined and predicted	5.2.1 Identification and quantification of existing sources of pollutants
		5.2.2 Detailed analysis and modelling of Lake circulation to determine the fate of pollutant and sediment discharges
		5.2.3 Add this output to to Lake Tanganyika database/GIS system (see Activity 1.2.4)
	5.3 Patterns and structure of biodi-versity in the Lake with emphasis on conservation areas	5.3.1 Prepare inventories of species by geographic distribution and habitat and estimate their relative abundances
		5.3.2 Determine various criteria for assessing diversity in each study area and habitat
		5.3.3 Study the underlying causes of the extraordinary biodiversity in the Lake and their implications for conservation of the fauna
		5.3.4 Determine criteria for selecting areas to be protected; identify areas for inclusion in future reserves and delineate priority areas
		5.3.5 Output to be added to Lake Tanganyika database/GIS system where appropriate (see Activity 1.2.4)

Table 3 (continued) : Immediate objectives, outputs and activities (Ref.: Prodoc, § D, pp. 25-33, 1994)

	5.4 Recommendations for the mitigation of damaging ef-fects of fish exploi-tation	5.4.1 Estimate actual & potential impacts of commercial and traditional fishing methods on the biodiversity and stability of fish stocks
		5.4.2 Examine the numbers and species of fish taken by the ornamental fish trade. Estimate the present and potential markets
		5.4.3 Investigate the possibility of using computer-based models to evaluate the ecological impact on fishing and other exploitation
		5.4.4 Identify and make recommendations on alternative (& less harmful) fishing methods and management strategies
	5.5. Plans in other sectors examined	5.5.1 Synthesise the present and future potential impacts on the Lake from the various sectors (on the basis of sectoral plans)
	5.6 Prospects for the future of the Lake management investigated	5.6.1 Carry a study on existing tourism potential around the Lake
		5.6.2 Examine the precise economic role of fishing for men and women at village level & he traditional patterns of these activities
		5.6.3 Made enquiries to the awareness and expectations of communities from the Lake and from the project itself
		5.6.4 Examine the possibility of other income generating activities, whether from tourism, fishing skills, or other sources
6. Implementation and sustainability of the Lake Tanganyika Strategic Plan and incorporated environmental management proposals	6.1 Long-term research and moni-toring programmes	6.1.1 Identify need of further work & low cost means for monitoring significant threats following the completion of the project
		6.1.2 Consolidate the elements giving a continuing picture of the pollution impact on the Lake into an internat. monitoring program which can be operated by the four partner countries themselves
	6.2 Management plans drawn up	6.2.1 Make ecological surveys of the proposed reserve areas
		6.2.2 Define and reconcile local socio-economic interests relating to the establishment of the reserves
		6.2.3 Prepare recommendations for specific reserve boundaries, access by user type and nature of concessions
		6.2.4 Produce First Phase management plans for the underwater reserves
	6.3 New underwater components of re-serves established and managed (both the terrestrial and underwater compo-nents of the reser-ves will be mana-ged as one interde-pendent unit)	6.3.1 Manage a new underwater component of the reserve at Nsumbu (Zambia) during project years 1 to 3
		6.3.2 Manage a new underwater component of the reserve at Mahali (Tanzania) during project years 2 to 4
		6.3.3 Select at least one further reserve; Set up and managed it within the project, during years 3 to 5

		6.3.4 Develop community participation programs to ensure local benefit from and encourage acceptance of reserves
		6.3.5 Develop user facilities, such as underwater trails and interpretative displays
		6.3.6 Produce underwater guidebooks for the reserves
		6.3.7 Workshop of experts on tourism to discuss the potential of Lake underwater reserves for stimulating eco-tourism in the area
		6.3.8 Prepare detailed recommendations with budgeting for sustainable operation of the underwater reserves
		6.3.9 Provide specialised advice and support for management of the reserves
	6.4 Involvement and cooperation of local people ensured	6.4.1 Incorporate the local consultative groups & teachers' groups formed into management groups for conservation areas
		6.4.2 Give all support to teachers and schools in order to change the attitudes of the on-coming generations
		6.4.3 Analysis of the scale and distribution of any benefits to determine if the benefits are likely to reach the target group

Table 4: PROJECT FRAMEWORK (Source: NRI Bid, table 14)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
GOAL 1. The protection of the biodiversity of Lake Tanganyika.	1 By 5 years after end of project no discernible loss of, or threats to, biodiversity in the Lake.	1.1 Reports of regional coordinating committee 1.2 GEF evaluation 1.3 Reports in scientific literature.	1.1 Monitoring and necessary controls implemented in timely fashion.
PURPOSE An effective regional approach established for the management of sediment discharge, pollution and fishing, thus preventing the loss of biodiversity in Lake Tanganyika.	1 By 5 years after end of project the scale of the negative impacts from sediment loads and urban or agricultural pollution limited and harmonised system of pollution controls and cross sectoral communication adapted by four countries by two years from end of project.	1.1 Reports of regional coordinating committee 1.2 Reports from pollution and sediment monitoring system 1.3 GEF evaluation	1.1 Actions recommended in Strategic Plan maintained and legislation enforced. Coordinating committees maintained and effective.

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
OUTPUTS PHASE 1			
1. Inception report produced based on review studies.	1.1 Issue of inception report by end month 6	1.1 Inception report submitted and accepted	1.1 Mobilisation suffers no serious delays. 1.2. Strong support to project from participating governments and institutions. 1.3 suitable counterpart and local staff available 1.4 Funding to project efficient
2. Preliminary Lake Tanganyika Strategic Plan formulated based on detailed reports on the history and current status of biodiversity and pollution in the Lake, and studies showing the interdependence between lake-based and other sectors of the economy.	2.1 Preliminary Strategic plan drawn up identifying critical areas for project attention; selection of major indicators for monitoring and evaluation	2.1 Acceptance of Preliminary strategic plan by Project Steering committee and GEF	

Table 4 (continued): PROJECT FRAMEWORK (Source: NRI Bid, table 14)

OUTPUTS PHASE 2			
3. Final Lake Basin Strategic Management Plan produced identifying areas of immediate policy application, areas of further study and baseline and framework for long-term research and monitoring programmes.	3.1 Final Strategic Plan presented 2.5 years after start of project.	3.1 Final Strategic Plan meets participating governments and GEF requirements	3.1 Political will exists for international cooperation to conserve Lake biodiversity
4. Cadre of scientists, technicians and managers trained able to continue monitoring and management of reserves	4.1 By end of project sufficient trained personnel available to implement recommendations in strategic plan.	4.1 Project reports 4.2 Evidence of degrees and diplomas received 4.3 Personnel reports from participating institutions	4.1 Suitable trainees available in sufficient numbers
5. Community participation established. Appropriate mechanisms for communication between local communities in the four countries and their respective national Lake management working groups established.	5.1 Appropriate communication media and fora identified in Preliminary Strategic Plan and implemented by end of first year of project	5.1 Project reports 5.2 Reports of collaborating institutions 5.3 Reports of national working groups	5.1 Communities willing to cooperate and collaborate with project.

OUTPUTS PHASE 3			
6. Lake Basin organisation established for continuation of essential long-term activities	6.1 Existence of suitable body with well defined ToR and funding mechanism	6.1 Documents relating to formation of group 6.2 Minutes of meetings	6.1 Political will exists to maintain group. 6.2 Funding can be secured
7. Pollution monitoring programme established	7.1 Pollution monitoring scheme established with well defined institutional responsibilities and funding mechanism , by end of project. 7.2 Necessary legislation enacted	7.1 Project reports 7.2 Institutional work programmes. 7.3 Legislation documents	7.1 Funding for pollution monitoring scheme maid available
8. Economic Appraisal study undertaken to assess impact of project on local communities	8.1 Report of economic appraisal study issued	8.1 Report received and accepted	
9. Mechanisms established for continuance of community participation and support	9.1 Descriptions of appropriate mechanisms for at least two local communities communicating with the national working group in each country by end of Phase II Year 1. Final Strategic Plan to contain tested mechanisms for communicating at national and national-local levels.	9.1 Project reports 9.2 Results of local community meetings 9.3 Minutes of national working group meetings 9.4 Final Strategic Plan	9.1 Communities willing to cooperate and collaborate with project
10. A Cross Sectoral planning Forum established for inter and intra country communication across sectors	10.1 Lake management commission or similar body established by end of project with well defined mandate and funding mechanism	10.1 Documents relating to formation of group 10.2 Minutes of meetings	10.1 Political will exists to maintain group. 10.2 Funding can be secured
11. Lake Reserves established	11.1 Three Lake reserves legally and physically established by end of project at Nsumbu, Mahali, and one additional location identified in Phase II.	11.1 Legislation to enact formation of reserves.	11.1 No local or political opposition

Table 4 (continued): PROJECT FRAMEWORK (Source: NRI Bid, table 14)

ACTIVITIES	**INPUTS/RESOURCES**		
1.1 Carry out baseline review studies 1.1.1 Biodiversity degradation 1.1.2 Sector status and effect 1.1.3 Institutional capacity 1.1.4 legal framework 1.1.5 community aspects 1.2 Produce inception report.	Details in main proposal	Budget documentation Implementation plan	To be provided in detailed PFs for each major output after mobilisation visit.
2.2 Organise workshop2.3. Produce preliminary strategic plan			
3.1 Undertake special studies: 3.1.1 Sediment discharge and consequences 3.1.2 Pollution of international waters 3.1.3. Biodiversity studies 3.1.4. Fishing practices and biodiversity 3.1.5. Socio economic and sectoral studies 3.2 Establish legal framework			
4.1 Identify training needs 4.2 Select candidates and counterparts 4.3 Carry out on the job training 4.4 Organise scholarships			
5.1 Establish contacts with NGO 5.2 Carry out community surveys 5.3. Establish community workshops			
6.1 Identify requirements based on Phase I and II of project. 6.2 Draw up detailed TOR for group and membership			
7.1 Implement recommendations in Strategic plan			
8.1. Carry out detailed survey of benefits and costs at national and village level			
9.1 Implement recommendations in Strategic Plan			
10.1 Draw up detailed TOR for group and membership			

Table 5: Draft Logframe, Phase Two (Special Studies and Strategic Planning) Source: Inception Report, updated 2 May 1996

Narrative Summary	**Objectively Verifiable Indicators (OVIs)**	**Means of verification (MoVs)**	**Assumptions**
Goal: Protection of the biodiversity of Lake Tanganyika			
Purpose: A coordinated approach to the sustainable management of Lake Tanganyika	1. Strategic Plan developed on basis of special studies, accepted by Mid 1999	1. Strategy document discussed endorsed officially by 4 lacustrine states	***(purpose to goal)*** Extra-project funding available for national and regional action programmes beyond 2,000
	2. Institutional and legal framework for future management in place by Mid 1999	2. Key legal measures and institutional MECHANISMS PUBLISHED IN GOVERNMENT GAZETTES	Political instability and conflict do not impede regional cooperation
	3. Nationally defined action programmes underway by 2,000	3. Working plans and records of key national institutions	National institutions perform effectively in implementing strategic plan; Legal measures and national action programmes successfully control Lake basin environmental degradation

Table 5 (continued): Draft Logframe, Phase Two (Special Studies and Strategic Planning) Source: Inception Report, updated 2 May 1996

Narrative Summary	**Objectively Verifiable Indicators (OVIs)**	**Means of verification (MoVs)**	**Assumptions**
Outputs			***(output to purpose)***
1. Regional legal framework established	1.1 Draft legal framework written and circulated by 8/97 1.2 Proposals for harmonisation agreed and amended national legislation drafted by 1999	1.1 Draft legal framework plus government discussion documents x 4 1.2 Formal proposals to government and draft legislation	
2. Regional coordination mechanism established	2.1 Proposals developed by 1999 for ongoing extra-project funding of necessary regional coordination and transnational action plans; 2.2 National action plans incorporate coordinated activities for trans-national management of lakeside issues by 1999	2.1 sub-project documents prepared by regional steering group 2.2 National Lake Tanganyika action plans and agency working documents	Regional legal requirements can be effectively translated into national legislation; Legislative instruments effective in controlling environmental damage and curbing degradation; Regional management problems, e.g. Lake transport, fisheries, population growth and displacement can be addressed through coordinated national activities
3. Special studies completed as basis for strategic plan	3.1 Socio-economic studies completed and strategic implications assessed by 12/98 3.2 Biodiversity studies completed & strategic implications assessed by 12/98 3.3 & 3.4 Pollution and sedimentation studies completed & strategic implications assessed by 12/98	3.1 Participatory action research programmes underway at specific sites in each country by 1997; 3.2-3.3 specific MoVs to be identified 3.1-3.4 Special study reports and strategic discussion documents for each thematic area produced and circulated by each country by 9/98	Studies successfully identify opportunities and constraints for biodiversity protection through pollution and sedimentation control and stakeholder participation; lessons of participatory action research incorporated into wider strategic planning by key agencies; recommendations of studies accepted by national governments
4. Environment Education programme established	4. National environment education programmes x 4 underway by 1997, including NGOs and Government agencies reviewed by 1999, including: 4.1 pilot community level activities with monitoring system in place; 4.2 training programmes for staff of national institutions;	4. National EE Workshop reports and workplans x 4 ; programme review reports	Incentives exist for local people to change degrading resource use practices; Enhanced awareness results in adoption of environmentally and institutionally sustainable strategies and improved coordination by key agencies; Major regional population **:** land resource imbalances can be overcome

Table 5 (continued): Draft Logframe, Phase Two (Special Studies and Strategic Planning) Source: Inception Report, updated 2 May 1996

Activities

1.1 Legal studies
1.2 Draft regional legal framework developed
1.3 Harmonised national legislation proposed

2.1 National responsibilities and lead agencies identified
2.2 Regional coordination mechanism discussed and agreed
2.3 National action plans on lakeside issues drawn up

3.1 Regional socio-economic coordinator recruited by ?
3.2 Initial field investigations to fill gaps in baseline reviews, draw up work plan and methodologies for detailed studies by December 1996
3.3 National agencies commissioned to undertake special study components by 4/1997
3.4 Interim reports by 12/97 and 6/98, ongoing supervision, coordination and technical support by PCU/NRI
3.5 Shortest of aquatic protected areas drawn up by 12/97, feasibility assessed by 9/98
3.6 National synthesis and thematic overview reports by 9/98
3.7 Strategic implications of special studies reviewed by 12/98

4.1 National EE coordinators identified
4.2 Initial assessment of EE training needs
4.2 National EE workshops held and programmes draw up
4.3 Participatory investigations and awareness raising at village level; implementation and monitoring of pilot action programmes
4.4 Training and awareness programmes for staff of implementing agencies, including cross-lake exchange visits and study tours
4.5 Public awareness and schools EE programmes

TABLE 6: COMPARISON OF THE FORMULATION OF THE IMMEDIATE OBJECTIVES

Project brief, 1993	Prodoc, 1994	NRI Bid, 1995	Inception report, 1997	Actual, Spring 1998
		Phases I, II, III to cross with the six objectives:	Phases I, II, III to cross with the six objectives:	
1. Establish a regional long term management program for pollution control, conservation and maintenance of biodiversity; 2. Formulate a regional legal framework for cooperative management of the lake environment; 3. Establish a programme of environmental education and training for lakeside communities and environmental scientists; 4. Establish a tested mechanism for regional coordination in conservation management of the Lake Tanganyika basin; 5. Develop a "strategic plan" for the long term management of the lake based on a better understanding of the ecosystem functioning, the impact of pollution on the system, and improved knowledge of its biodiversity; 6. Implement sustainable pollution monitoring programme and conservation area management plans.	1. Establish a regional long-term management program for pollution control, conservation and maintenance of biodiversity in Lake Tanganyika 2. Formulation of a regional legal frame-work for cooperative management of the lake environment 3. Establish a programme of environmental education and training for Lake Tanganyika and its basin 4. Establish tested mechanisms for regional coordination in conservation management of the Lake Tanganyika basin 5. In order to produce a full Strategic Plan for long-term application, some specific studies need to be undertaken. These special studies will also add to the understanding of the lake as a whole and, in some cases, provide the baseline and framework for long-term research and monitoring programmes 6. Implementation and sustainability of the Lake Tanganyika Strategic Plan and incorporated environmental management proposals.	1. To establish regional long-term management programme for pollution control, conservation and maintenance of biodiversity in Lake Tanganyika 2. To formulate a regional legal framework for cooperative management of the lake environment 3. To establish a programme of environmental education and training for Lake Tanganyika and its basin 4. To establish tested mechanisms for regional coordination in conservation management of the Lake Tanganyika basin 5. To produce a full Strategic Plan for long-term application to be based upon the results of specific studies which need to be undertaken. These special studies will also add to the understanding of the lake as a whole and, in some cases, provide the baseline and framework for long-term research and monitoring programmes. 6. To implement sustainable activities within the Lake Tanganyika Strategic Plan and incorporated environmental management proposals.	1. Establish a regional long term management programme for pollution control, conservation and maintenance of biodiversity in Lake Tanganyika. 2. Formulate a regional legal framework for cooperative management of the lake environment. 3. Establish a programme of environmental education and training for Lake Tanganyika and its basin. 4. Establish tested mechanisms for regional coordination in conservation management of the Lake Tanganyika basin. 5. Produce a comprehensive strategic plan for long-term application to be based upon the results of a series of special studies aimed at improving the understanding of the lake as a whole. Information derived from these studies will be fundamental in the development of long-term management strategies and will in some cases, provide the baseline and framework for long-term research and monitoring programmes. 6. Implement sustainable activities within the Lake Tanganyika Strategic Plan and incorporated environmental management proposals.	1. Establish a regional long term management programme for pollution control, conservation and maintenance of biodiversity in Lake Tanganyika. 2. Formulate a regional legal framework for cooperative management of the lake environment. 3. Establish a programme of environmental education and training for Lake Tanganyika and its basin. 4. Establish tested mechanisms for regional coordination in conservation management of the Lake Tanganyika basin. 5. Produce a comprehensive strategic plan for long-term application to be based upon the results of a series of special studies aimed at improving the understanding of the lake as a whole. 6. Implement sustainable activities within the Lake Tanganyika Strategic Plan and incorporated environmental management proposals.

1. Table 3 (3 pages) summarises the structuring of the project in objectives, outputs and activities of the Prodoc (1994). The impressing number of outputs (18) and activities (81) is striking and so is the formulation which differs quite a lot from the normal standards. As examples of the insufficient formulation, the evaluation mission has marked in grey the less operational formulations (objective 5, activities 6.1.1, 6.1.2, and 6.4.2 ...).

2. Table 4 (3 pages) repeats the logical framework of the project based on the NRI bid (1995). It is seen that the formulation of objectives has changed only little. On the other hand, the project is structured in three phases, which is not in accordance with the Prodoc, and the outputs and activities have been completely modified compared to the Prodoc.

3. Table 5 (3 pages) repeats the logical framework of the project as it was established during the Inception Workshop in Dar es Salaam (March 1996) and updated in May 1996. It is seen that the formulation of objectives is still the same and that the project is structured in three phases, which the evaluation mission has not noticed during its meetings with the operators. The outputs and activities have been modified again compared to the NRI bid (1995).

4. Table 6 (1 page) shows that the formulation of the immediate objectives of the project are unchanged since the Prodoc. The mission has only quoted the English versions because the translation into French of such important documents is simply disastrous. In the Project Newsletter, for example, the objective No. 2 is translated as follows: *"…. formuler un cadre légal régional pour renforcer* [sic] *la gestion paritaire de l'environnement du lac."*

5. **Findings.** The evaluation mission has the following findings concerning the formulation of objectives:

Formulation of immediate objectives	Findings of the evaluation mission
1) Establish a regional long term management programme for pollution control, conservation and protection of biodiversity in Lake Tanganyika.	The formulation is redundant considering the objectives No. 2, 4 and 5. Actually the regional programme for long term management is sustained by the regional cooperation frame-work (objective 2) and manifested in the SAP (objective 5). Furthermore, the objectives No. 2 and 5 include the objective No. 4.
2) Formulate a regional legal framework for cooperative management of the Lake environment.	It is not only a question of making (activity) a regional legal framework for a joint management of the lake and its environment (output) but primarily to make it adopted and implemented (objective).
3) Establish a programme for environmental education and training for Lake Tanganyika and its basin.	
4) Establish tested mechanisms for regional coordination in conservation management of the Lake Tanganyika basin.	What does "tested" mean in this context? Should the mechanisms have been tested elsewhere or should they be tested during the project period? In this case a project period of 5 years in not enough.
5) Produce a comprehensive strategic plan for long term application, to be based upon the results of a series of special studies aimed at improving the understanding of the Lake as a whole.	The poor formulation of the exact objective "long term management of the lake within the framework of a progressive strategic action plan" mixes up the output (the SAP itself) and the activities leading to its achievement (the production of the SAP based on the special studies).

6) Implement sustainable activities within the Lake Tanganyika Strategic Plan and *(apply?)* incorporated environmental management proposals.	This objective has a lack of clarity. The evaluation mission has added the missing part of the sentence in square brackets in order to facilitate the interpretation. It is not an objective but a group of activities. Furthermore, they are post-project activities (application of SAP).

1. The evaluation mission has noticed that, in addition to the insufficient formulation of the objectives (which have remained practically unchanged since the writing of the Prodoc) the structuring of the project in outputs and activities and their time scheduling (which has been changes quite a lot since the writing of the Prodoc) is problematic.

2. The evaluation mission has not been able to structure the project activities in a way that corresponds to what the operators have presented in the field. The prevailing impression is that the project represents a collection of activities of which the field teams ignore the overall purpose and structuring. Furthermore, it appears from the interventions of national institutional operators during the TDA workshop in Lusaka (where the evaluation mission has attended as observers) that the governmental authorities are still not able to see precisely how the haul of collected data is finally going to be organised in order to conclude in a regional framework for a joint management of the Lake.

3. It should be noticed that during the Workshop in Lusaka at the end of November 1998, the participating countries have asked for a clarification of the project strategies and the scheduling of activities and after having pointed out certain discrepancies they have asked for a revision of the schedule. This justifies a new revision of the objectives, outputs and activities. It seems essential that such a revision should be based on the conclusions of the evaluation mission.

4. The changes in the project organisation and in the schedule of activities reflects the inadequate guiding of the design and implementation of the project since the very origin. As mentioned above, the project is part of the GEF concentration area ”International waters” but focus has been put on the problem of protecting the biodiversity against the threats (some of which have still not been proved), overruling the other problems. This original lack of clarity concerning the target explains the indecision of the project strategies and partly also the observed delays.

Priority recommendation: Reformulate and stabilise the logical framework

The evaluation mission proposes that the logical framework of the project is reviewed with focus on the central problem that there is currently no framework for the management of the Lake Tanganyika as an international basin. Such a refocusing also allows the project to be put back in the GEF concentration area according to which the financing has been granted (see recommendation No. 1). In this perspective, the protection of the biodiversity appears to be a beneficial effect of a sound and rational management of the Lake and not the central problem of the management of the Lake.

3.1.4.2 Objectively verifiable indicators

1. The evaluation mission points out that the Prodoc does not present the logical framework of the project, nor does it mention objectively verifiable indicators (OVI) allowing to evaluate the course of the project and the achievement of its objectives.

2. The evaluation mission has appreciated that in its bid the NRI Consortium has tried to organise the objectives, outputs and activities according to a logical framework in order to make up for the insufficient description in the Prodoc. The above table 4 indicates the OVIs of the NRI bid. As mentioned before, the logical framework of the phase II has been completely revised during the Inception Workshop in 1996. Table 5 indicates the OVIs retained in this new design.

3. Finally, the evaluation mission has noticed that the national operators of the project are not concerned about the logical framework in which they are situated. It should be emphasised that for most of the operators in the field it is not necessary to have an overall view of the project as their activities are limited to supplying the NRI Consortium with data of which they are completely or partly unaware of the further use (see § 3.3).

4. **Recommendation.** The evaluation mission recommends: (1) that the logical framework (including the OVIs) is established according to the restructuring of the objectives and outputs proposed in § 3.1.8 and (2) that the national operators in the field are clearly informed of the use of their work and of the way of evaluating this work.

3.1.5 Organisation chart and project organs: mandates, terms of reference

1. The evaluation mission is in possession of two organisation charts of the project:

   - the organisation chart of the Prodoc (1994);
   - the organisation chart presented in 1998 in the Project Newsletter[14]

Besides, there is a figure 4 in the Inception Report showing "the appropriate structure for the global management of the project and the key relations". As the evaluation mission has received this document in electronic format (without figures), the figure cannot be reproduced here.

1. The evaluation mission has the following comments to the organisation charts in their possession (figures 4 and 5):

- The organisation chart of the Prodoc was not feasible. It placed the Project Coordination Unit (PCU) above the countries. The International Technical Committee was inserted between the Regional Steering Committee and the PCU. There had been established a Training and Education Committee which seemed to be out of the control of the beneficiary countries, thanks to its position. Finally, the organisation chart entailed a GEF supervising mission that should deal with the project operations at all levels while the representations of GEF as well as UNDP or the governments are allowed to act only at the level of the Regional Steering Committee.

[14] "Lakeside", vol. 1, No. 1, Spring 1998, page 4.

Figure 4: GEF Lake Tanganyika Project management organisation (Prodoc, p. 20, 1994)

Figure 5: organisation chart of the project
(Source: Lakeside, Vol. 1, No. 1, Spring 1998, page 4)

- The organisation chart from 1998, elaborated by the PCU, try to remedy the insufficiencies of the organisation chart of the Prodoc but it is still not feasible because it presents a linear structure mixing up the organs and the results of the project. This structure applies from the Regional Steering Committee and right to the organ responsible for the Lake management (which does not exist since the establishment of such an organ is precisely the envisaged result of the project). Due to their position in the chart, the NRI Consortium and the PCU depend only on the GEF/UNDP/UNOPS and not on the Regional Steering Committee, etc.

1. The evaluation mission finds that the question of organisation chart and names of the project organs is not purely formal since a clear and realistic organisation chart is the condition of a good comprehension by the national and international operators of the positions of the respective organs in the project. The evaluation mission estimates that the present organisation chart does not correspond correctly to the desirable organisation of a project of this importance. Furthermore, the evaluation mission finds that the present titles of organs and positions give rise to confusion. Consequently, the evaluation mission recommends that an organisation chart is established taking into consideration the other recommendations concerning names and mandates of the project organs.

Priority recommendation: Revise the organisation chart of the project, write down the mandates and/or the terms of reference for each organ as well as detailed descriptions of each position.

The evaluation mission proposes a revision of the organisation chart of the project based on the following (which is to be left unchanged until the completion of the project, without creating new structures, nor new positions):

1. *Respect for the hierarchical position and for the exact functions of the different positions and organs;*
2. *Compliance of the titles of organs and positions with their real mandates;*

- *For example, the present "National Coordinators" are in fact the "National directors" of the project. The real national coordinators are the present "Assistants to the National Coordinators" who do not depend on their authority since they are part of the project team and are paid by the NRI Consortium.*
- *Likewise, there can be only one managing authority of the project, namely the Project Steering Committee, consisting of the project parties (the four beneficiary countries, UNDP/GEF and UNOPS as executing agency). The present "National Steering Committees" have no authority to run the project. They are merely "National follow-up committees" whose main role is to facilitate the execution of the project in their respective countries, to ensure the compliance of the project orientation with the national policies and institutional framework and, finally, to look after the implementation of the results.*

3. *Respect for the national institutional framework: it should be avoided that the project team entrusts the implementation of certain activities to other national structures than those having the official authority.*

A revised organisation chart for the project is given hereafter.

1. The evaluation mission proposes that the organisation of the project is based on four levels of responsibility (see figure 6):

2. Institutional/decision-making level: this is the level of the Regional Steering Committee and the National Follow-up Committees (replacing the National "Steering" Committees);

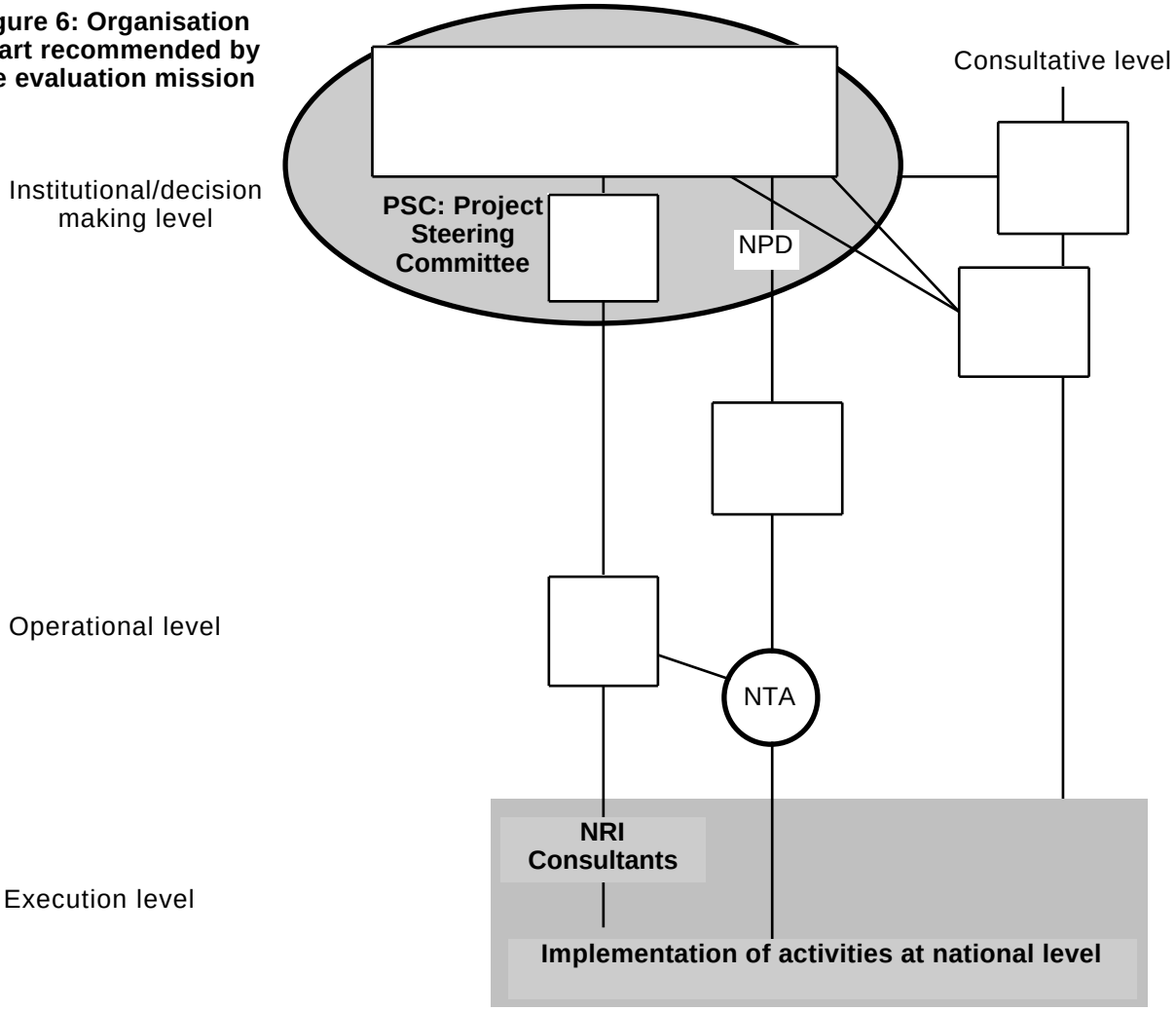
3. Consultative level: this is the level of TAC, of the local UNDP offices and of the National Follow-up Committees (NFCs);

4. Operational level: this is the level of the PCU and the Assistant to the National Coordinators (or; better; National Technical Advisors);

5. Execution level: this is the level of the project operators, including the members of the NRI Consortium acting as executants, the national services involved in the project, the members of NFCs acting as responsible for the administrative services operating in the project.

6. Due to the fact that the four beneficiary countries have equal positions in the project (and taken into consideration that the ideal organisation chart showing the four countries should be three-dimensional) the following proposed structure is presented only for one country and not for all four.

Figure 6: Organisation chart recommended by the evaluation mission



7. The project organs are described in the Prodoc (§ B.7, Coordination arrangements, pages 21-22). They were specified during the meeting in Dar es Salaam on March 26, 1996, which was attended by the National Coordinators of the project, the representative of UNDP/GEF and the Project Coordinator. They have been subjected to discussions at other statutory project meetings.

8. The evaluation mission points out that the definitions of organs mentioned in the Prodoc are not feasible just like the organisation chart stipulated by the Prodoc; this explains the subsequent hesitation concerning their precise definition. For example, the implementing agency (i.e. the NRI Consortium) is a member of the Regional Steering Committee (called the "Lake Tanganyika Conservation Steering Committee") which is not part of its tasks. The PCU, as planned, is oversized and encroaches upon the mandate of the executing agency (a unit in charge of controlling the teams is planned....). The title of National Coordinator instead of the traditional National Director of the UNDP projects creates a confusion (which has lasted until today) between the roles of governmental representative and the operational roles concerning the coordination of project activities. Moreover, the Project Coordinator chairs the Technical Committee which is mandated to evaluate its technical work (see annex VII, B of the Prodoc). Etc.

9. Without dwelling on the intermediate stages between the Prodoc and today, the evaluation mission considers that the designations of the organs should respect the usual terminology of UNDP projects. The mandates of the useful organs should be clearly specified. There should be a clear distinction between the roles concerning orientation-monitoring-evaluation (governments, UNDP/GEF, UNOPS), the consultative roles (TAC), the operational roles (PCU, National Technical Advisors) and finally the roles concerning execution (national consultants and operators). The correspondence between the present names and the proposed names are as follows (the names of organs, which are not mentioned, are unchanged):

Present names	**Recommended names**
Regional Steering Committee	Project Steering Committee (PSC)
National Project Coordinator	National Project Director (NPD)
National Steering Committee	National Follow-up Committee (NFC)
National Project Coordinator's Assistant	National Technical Advisor (NTA)

1. **Recommendation.** For each of the project organs or positions the evaluation mission recommends that the terms of reference are written down, taking into account the other relevant recommendations.

3.1.6 Scheduling of outputs and activities

1. The evolution of the project design since its origin has been presented in § 2.3. This section is limited to the scheduling of outputs and activities as it was assessed by the evaluation mission.

2. During the evaluation, the organisers of the TDA workshop in Lusaka presented the scheduling of activities right to the completion of the project (see figure 7). This presentation gave rise to criticism from the representatives of the beneficiary countries. The members of the

evaluation mission, who were only participating in the workshop as observers, did not intervene in the discussion but they agree completely with the beneficiary countries.

Figure 7: Scheduling of the activities discussed during the TDA Workshop in Lusaka
(November 1998)

3. Actually, the course indicated in figure 7 presents three parallel approaches: one concerning the special studies, one concerning the Strategic Action Plan (SAP) and one concerning the elaboration of the Regional Convention. This comes down to elaborate the Strategic Action Plan (SAP): (1) before the results of the special studies are achieved allowing the assessment of the problems to be solved and (2) before the ministers formally agree on the principle of a regional cooperation. Under these circumstances, there is an important risk that the final project outputs will be rejected *in fine* by the governments to whom they should be beneficial.

4. Furthermore, the programming of the SAP elaboration process before the completion of the special studies made it impossible to take into account the results obtained from these and consequently deprived them of any use. Through their request for a rescheduling of the project activities in a logic order, the beneficiary countries give their full justification to the special studies.

5. The evaluation mission firmly recommends that logic order, which was formulated orally at the conclusion of the TDA Lusaka Workshop, is respected.

Priority recommendation: Respect the logic order of the production of results

1) Compilation of the existing data (incl. the national, regional and international legislative and institutional, framework) → *2) Elaboration of the regional agreement* / *3) Special studies* → *4) Strategic action plan (SAP)*

3.1.7 The specific question of associating Rwanda in the project

1. Rwanda has a special position. The country is not a riparian of the Lake and is therefore not directly concerned by its exploitation or conservation. However, part of the side basin of the Lake is situated on the territory of Rwanda and, in that capacity, the Lake is affected by the development activities and the occupation of the ground of this part of Rwanda which has (or could have) a direct influence on the Lake.

2. The evaluation mission finds it important to draw the attention of the project parties (beneficiary countries, UNDP/GEF and UNOPS) to this special question concerning Rwanda. At the beginning of the project, Rwanda was not associated since the view of the authors of the project was focused on the biodiversity of the Lake and not on the management of the Lake within its basin. Nonetheless, Rwanda occupies a part of the side basin of the Lake. If the present concepts and principles concerning integrated water resources management (see annex 7) are to be respected, the necessity of associating Rwanda is a fact.

3. As Rwanda is, however, not a riparian of the Lake, it cannot have the same degree of involvement in the management of its resources. But its position in the basin imposes the country a certain responsibility for the conservation of the Lake. So, either the present activities in the Rwandan part of the basin (deforestation, erosion, pollution ?) have a confirmed impact, which would justify its immediate association, or these activities might require, one day or another, a cooperation with Rwanda and in this second case it would be advantageous to establish the basis for such a cooperation without hesitation by associating Rwanda with the project

immediately (in a form which still needs to be defined and which takes into account the particular position of this country).

4. Since Rwanda sank into chaos in 1994, one year before the actual start of the project, the question of its participation never occurred. Today, the internal situation of the country is being normalised and it is therefore legitimate to ask the question of Rwanda's role in the project.

Priority recommendation: The evaluation mission recommends that the Rwandan government is invited to participate, as observer, in the next meeting of the Project Steering Committee and that the practical details in connection with its association with the project is put on the agenda for this meeting.

3.1.8 Partial conclusion on the project design

1. **Recommendation**. Considering the confusion which has gradually occurred in the formulation and the scheduling of the objectives, outputs and activities, the evaluation mission recommends that the project concentrates on fulfilling the fundamental needs of the beneficiary countries. In this respect, the evaluation mission proposes that the following formulation and structuring of the objectives and outputs of the project are adopted until the project completion.

Development objective: a sustainable exploitation of Lake Tanganyika and its basin for the benefice of the riparian populations and assuring the sustainability of the unique Lake ecosystems.

Immediate objective: a permanent framework for integrated management of the Lake based on a political dialogue between the five countries sharing (or affecting) the resource.

Outputs

1) Regional convention (including the fisheries agreement in preparation under LTR project)
2) Organism for political dialogue
3) Institutional management framework (unique organism or network of existing national institutions?)
4) (Strategic) Action Plan
   - Assessment of existing information
   - Special Studies (technical, social, economic, participatory)
5) Capacity for monitoring and assessment of water resources issues
   - Equipment
   - Training
6) Capacity for awareness making and education

3.2 Project implementation

3.2.1 General findings

1. Generally, the evaluation mission estimates that the project is well managed when it comes to planning and organisation of the activities as well as when it comes to the committing of expenses and the follow-up on their execution (??). At this level, there is consequently no particular problems that could be subject to improvements.

3.2.2 Execution of the mandate of UNOPS as executing agency

1. UNOPS, appointed by UNDP as executing agency of the project, is one of the principal execution agencies of UNDP projects. This office has specialised in the execution of development projects and has a long experience in the field of regional projects in Africa. Considering the delegation of the project implementation to the NRI Consortium, being specialist in the technical fields of the project, the role of UNOPS concerns support to the methodology and the financial management of the project rather than technical expertise. The role of financial execution of the project has been perfectly handled by UNOPS.

2. However, the evaluation mission estimates that the scientific and technical monitoring of the project by UNOPS has not been reached the same level at the financial monitoring. This explains how the project has been able to progressively drift towards an illogical and badly proportioned structuring of the objectives, outputs and activities. Not until the Lusaka Workshop (at the end of November 1998) did the beneficiary countries ask for a review of the scheduling of outputs and activities of the project.

3. **Recommendation.** For the rest of the project the evaluation mission recommends that UNOPS reinforces its role of technical control according to the decisions that would have been taken at the next Regional Steering Committee meeting as a result of the present evaluation report.

3.2.3 Budget situation

1. The budget is divided into three important items: (1) the expenses undertaken directly by UNOPS (preliminary phase and execution costs of the principal phase); (2) the contract with the NRI Consortium; (3) the budget allocated to FAO within the framework of the interagency agreement concerning execution of the hydrodynamic study (subcontracted to the University of Kuopio).

2. The evaluation mission has no findings, nor recommendations concerning the execution of the contract binding UNOPS to the NRI Consortium.

3. The budget of the project amounts to **10,000,000 USD**. As for the situation of the budget at the time of the evaluation, the elements presented to the mission by UNOPS are as follows:

Expenses, 1993 (preliminary phase)	10,120 USD
Expenses, 1994 (preliminary phase, continued)	31,710 USD
Expenses, 1995 (beginning of implementation phase)	801,275 USD
Expenses, 1996	1,176,732 USD
Expenses, 1997	2,282,611 USD

Expenses, 1998 (situation at the end of October)	849,893 USD
Total:	**5,152,341 USD**

1. **Finding.** These expenses are not broken down between the above mentioned three large items. The financial situation of the FAO subcontract (hydrodynamic study) has not been formulated. The evaluation mission does not know whether the above mentioned amounts include the UNOPS execution costs. It has therefore not been possible for the mission to estimate the available remainder of the contract between UNOPS and the NRI Consortium (that covers the substantial project activities until the completion of the project).

2. **Recommendation.** The evaluation mission recommends that UNOPS presents a summary table at the next COP meeting, indicating the present situation as well as the expenses that have been undertaken but still not settled, among these the UNOPS (and FAO?) costs.

3.2.4 The intervention of FAO as collaborating agency

1. FAO has intervened as Collaborating agency in the carrying out of one particular component of the project, completing the special studies and applying to the development of a model of circulation and transportation of sediments. The model has been established by a Finnish team from the University of Kuopio. The objectives of this hydrodynamic project, as presented in the final report that was published in 1997, is to study[15] a number of phenomena:

2) to study the wind driven circulation
3) to study the major upwelling phenomena in the southern Lake basin and their role in vertical transport of hypolimnetic waters
4) to study the secondary upwelling and spreading of these waters along eastern and western shore of the Lake
5) to study the periodic oscillations of the Lake
6) to study the horizontal dispersion and transport of suspended matter in the Lake, especially near the main river inlets

7. The carrying out of this component by FAO has taken place within the framework of an interagency agreement between UNDP and FAO. It seems that neither the teams from the NRI Consortium, nor the national operators of the project have been involved in the work.

8. The model, called "TANGPATH" (Lake Tanganyika Particle Tracking Model), is distributed free of charge by the University of Kuopio that only invoices the handling and dispatching costs[16]. The evaluation mission has not been able to examine the functioning of the model as it has not been installed on the project computers. It seems that the model is still in the process of

[15] The evaluation mission points out that this formulation of the objectives does not reflect the operational usefulness of the work in relation to the general objective of sustainable management of the lake.

[16] Prof. Hannu Mölsä, Department of Applied Zoology and Veterinary Medicine, University of Kuopio, P.O. Box 1627, FIN-70211 Kuopio (Finland). Phone: +358 17 163148. Costs: USD 30,00.

being tested in Great Britain. The national staff has not received any training in the use of the model and the national scientists are not aware of its existence.

3.2.5 Support given by the local UNDP offices

1. According to the information obtained by the evaluation mission from the three local UNDP offices visited (Bujumbura, Dar es Salaam, Lusaka), it seems that the involvement of these offices in the project is not very strong. The one that is most affected is the office in Dar es Salaam, where the project has its headquarters. The reason for this general lack of involvement is that the direct relations are established between UNOPS and the NRI Consortium and that the local offices have not been asked to play the role of communication channel.

2. However, the evaluation mission has noticed that in spite of the impression of having been somewhat kept out of the project, the local UNDP offices do follow its progress carefully. They have made some very useful observations for the evaluation mission concerning the integration of the project in the national policies and within their national cooperation frameworks. The UNDP offices are also best situated and the most experienced to be able to advice the project concerning institutional arrangements with the governments and the most appropriate concepts for the organisation of projects[17]. Finally, the necessity of paying a particular attention to the human development aspects and to the participatory approaches in the course of the project has been emphasised by the UNDP officials.

3. Besides, the evaluation mission has experienced that the local UNDP offices react positively and with efficiency when they are called upon to give their logistical support to consultants in transit, for example by solving transport problems under conditions that are sometimes difficult as it is the case in Burundi.

4. **Recommendation.** The evaluation mission recommends that the relations between the project and the UNDP local offices are reinforced and that the Programme Officers are more closely involved in the implementation of activities and in the harmonisation of these with the activities of other development projects in their respective countries.

3.2.6 Institutional arrangements with the beneficiary countries

1. **Finding.** The mission has appreciated the choice of representatives within the project from each of the four governments. Actually, the four governments are represented by the managing directors of key institutions in the field of environmental protection. Consequently, there is at the same time a political representation and a technical follow-up capacity of the project at a very high level. However, the evaluation mission finds that also the highly executives from the water sector should be more closely involved in the project and help the PCU by throwing light on the national political orientations in this field.

2. **Finding.** The evaluation mission does not agree on the title of ”National Coordinators” which has been given to the representatives of the governments within the project. Primarily, the appropriate title in UNDP projects it ”National Project Director”. Secondly, these

[17] If the local UNDP offices had been consulted on the organisation chart of the project and on the mandates of the organs, the institutional arrangements would have been much more clear right from the start of the project.

"Coordinators" are not mandated to coordinate anything as the NRI Consortium is officially responsible for the implementation of the project. This title could therefore give rise to demarcation disputes[18]. In addition, the coordinators cannot be both judge and judged: i.e. coordinate the activities and then evaluate them as members of the Project Steering Committee. It is therefore necessary to review this title (see § 3.1.5 concerning the organisation chart and the mandates of the project organs).

3. **Finding.** The evaluation mission has noticed that the choice of national institutional operators is often guided by short term practical considerations and are consequently not always respecting the official mandates of the national institutions concerning follow-up and evaluation of the particular problems. The choice of operators is not taking into sufficient consideration the concern for a sustainable follow-up and evaluation within the framework of the future management of the Lake. Yet, in order to be sustainable, the future follow-up and evaluation activities should be placed under the responsibility of the institutions that are (or will be) formally in charge of them in their respective countries.

Priority recommendation: Identify which institutions are (or will be) mandated to fulfil each of the follow-up/evaluation functions that are planned for the future.

In case some of the institutions that are not presently involved in the project would be responsible for some of these functions, a plan should be prepared and implemented in order to involve them as soon as possible.

In case some of the present mandates should be modified (for technical, economic or practical reasons or for specific reasons in relation to the needs of the management of the Lake), there should be taken initiatives to make the necessary institutional (and statutory) changes.

3.2.7 National ownership and institutional anchoring

1. **Finding.** The present arrangements concerning the implementation are not likely to facilitate the appropriation of methods and results of the project by the political decision-makers and the national experts. Actually, each team of national specialists inside each country has only a limited and fragmented vision of the project strategies. The raw data are sent to the NRI Consortium in Great Britain. These data are treated by consultants outside the region with a very limited participation of national specialists. Under these circumstances, the evaluation mission estimates that it will be difficult for the decision-makers and for the national scientists, at the completion of the project, to take over the management instruments and tools whose main features they are still not acquainted with.

Priority recommendation: Involve the nationals further in the definition of the work programmes

[18] Fortunately, this is not the case because the "National Coordinators", who have experience from other UNDP projects, have understood their role as National Project Directors correctly.

The evaluation mission emphasises that the NRI Consortium has only got a temporary role as a contractor of UNOPS, while the countries have a long term responsibility for the application of the project results. They are therefore in the best position to specify their own needs and should be associated as soon as possible in the use of the results. The working programmes of the project should be specified in close collaboration with the decision-makers and the national specialists according to the following elements:

1) *The expected situation by the end of the project (the needs of the countries for a joint management of the Lake during the post-project phase);*
2) *The national policies and institutional frameworks (see priority recommendation No. 7);*
3) *The capacities of the local experts; this will make it easier to target the needs for professional training (see priority recommendation No. 8).*

1. **Finding.** The evaluation mission finds that the recent recruitment of expatriate facilitators for coordination of the special studies does not come up to the objectives of the project unless it is supplemented by the positioning of regional counterparts. The evaluation mission points out that the Project Steering Committee had recommended the recruitment of native facilitators from the beneficiary countries. Yet, these countries have not been involved in the selection of the facilitators appointed by the NRI Consortium and have been presented to a "fait accompli".

2. Entrusting the coordination of certain activities to international experts can only result in the loss of an important part of the capitalised knowledge, since these experts are not called upon to exercise in the region after the completion of the project. The national experts must not be reduced to the role of executing fragmented tasks because they are the ones to ensure the continuity of the project after its completion. That is why it is important to start promoting immediately the progressive assumption of the regional coordination tasks by the national experts.

Priority recommendation: Make the best qualified national experts on the regional level, work in close relation with the recently recruited facilitators.

In order to do so, the Project Coordination Unit should make an effort:

1) *To identify the best qualified and recognised national experts on the regional level in the different fields of the project;*
2) *To form two-person teams (expatriate facilitator + local specialist) in the four main fields of the special studies (pollution, sedimentation, fisheries, socio-economy);*
3) *To make the local specialists intervene in other countries than their own in the same capacity as the expatriate facilitators and in close collaboration with these.*

3.2.8 Use of the GEF inputs

1. **Finding.** Without implicating the accounting management of the project, the evaluation mission has the impression that certain expenses are not proportional to their effects on the

project results. The best illustration of this state of affairs is the Lusaka Workshop where not less than 5 representatives for each country and 7 expatriate experts from the NRI Consortium[19] participated. The evaluation mission does not implicate the holding of this type of periodical meetings which allow the national parties and the PCU to exchange views on the project. But the only concrete result of the Lusaka Workshop has been the acknowledgement that this meeting was premature since the assessed data on the threats against the Lake were not available and the scheduling of the activities leading to the Convention and to the SAP were consequently to be reviewed.

2. **Finding.** Another finding, which has been developed elsewhere, is that the project will not be able to produce the expected results within the deadlines that were planned initially and that a extension will be necessary. However, no extension can be made without respecting the budget. Consequently, there must be found economic means to reorganise the budgets towards the vital activities.

3. **Recommendation.** The evaluation mission recommends that the mission expenses (for expatriate or national experts) for project meetings should be limited to the minimum compatible with the achievement of expected outputs.

4. **Finding.** The evaluation mission has also noticed that the contract between UNOPS and the NRI Consortium has made provisions for the invoicing of tasks carried out entirely in Great Britain (for example, the baseline study on legislation, the database concerning the Lake, the geographical information system, etc.). The evaluation mission does not agree on this principle which does not ensure sufficiently the transfer of knowledge, nor the possibilities of follow-up and control by UNOPS or by the beneficiary countries.

5. **Recommendation.** The evaluation mission recommends that any charging of time to expatriate experts on the project budget should be limited to tasks carried out in the region, tolerating, however, (according to the agreement to be made between UNOPS and the NRI Consortium) the time spent on preparing and writing reports, if necessary.

3.2.9 External factors influencing (or having influenced) the project

1. As mentioned in the introduction there are some external factors which have seriously influenced the fulfilment of the project activities. Three main problems have been identified by the evaluation mission: (1) the situation in Burundi; (2) the situation in D.R.Congo; (3) the situation in Rwanda which has made it impossible to envisage in practice the involvement of this country in the project (see § 3.1.7).

2. The events in Burundi have had three effects:

a) The impossibility of carrying out the activities normally during the first years of the project because of the insecure situation of the country. The country is still under the impact of a curfew but the evaluation mission has noticed that the present situation allows the project activities (located next to the Lake) to be carried out normally since the summer 1998. Furthermore, the Scientific liaison officer of the project is presently based in Bujumbura. In

[19] Without counting the evaluators who considers their presence as observers in this workshop as one of the most productive moments of the mission....

this connection, the evaluation mission points out that if the security conditions in Bujumbura allows the Scientific liaison officer to carry out his activities in a normal way, this should also be possible for the PCU.

b) The transfer of the project head office to Dar es Salaam has had the effect of removing the Project Coordination Unit (PCU) more than 1000 km away from the Lake which has not made the communication between the PCU and the field teams easier.

c) An embargo has hit the country since 1996, while the internal situation is improving[20].

Priority recommendation: In accordance with the decision of the Project Steering Committee concerning the transfer of the project head office to Dar es Salaam, the evaluation mission recommends that the project head office is moved back to Bujumbura as soon as the two conditions, which make it possible, have been fulfilled: lifting of the curfew and of the embargo.

1. The civil war in the Democratic Republic of Congo (formerly the Zaire), has been concentrated primarily to the area of the Great Lakes, particularly the lakeside zone of the Lake Tanganyika (Uvira, Kalemie) and has consequently prevented the normal carrying out of the project activities on the Congolese shore of the Lake. In spite of the pillage of their installations and of the risks they were running, the scientists of the CHR of Uvira have performed heroic deeds to bring certain activities to a successful conclusion. At the time of the evaluation mission, the situation is still insecure but there are hopes of a normalisation in the near future. The high level of involvement of the Congolese scientists makes believe that by that time the activities will be able to start at a rapid rate.

Priority recommendation: The Project Coordination Unit should already now start preparing the scenarios concerning the restarting of the activities in D.R.Congo. Since the human resources are already in place, the PCU should pay a special attention to the procedures of a rapid transportation and installation of the necessary logistics in Uvira.

3.3 Substantive results of the project

3.3.1 General findings and recommendations

(144a) **Finding.** The evaluation mission estimates that the results achieved till now, in varying degrees but in practically all fields (legal and institutional framework, planning strategies, substance of special studies, economic evaluation, participatory approaches), are not able to constitute a sufficiently solid basis for a sustainable management of the Lake and its basin. Considering the limited remaining project period, the future activities should get to the heart of

[20] On January 22, 1999, the presidents of Kenya, Uganda and Tanzania have decided in Arusha to establish, before the end of July, an Economic Community of East Africa to which also Burundi and Rwanda could adhere. Furthermore, the summit of Arusha has decided the following day to lift the economic embargo, which was imposed on July 31, 1996 on the regime of Burundi after the coup that had restored the power of M. Buyoya.

the matter. The special studies should be reduced and the legal and institutional aspects of the management of the Lake should be reinforced.

Priority recommendation: Direct the production of project results towards the needs for a joint management of the Lake

Considering the hesitations in the approach and the delays that have been observed to date, the evaluation mission estimates that the project activities for the remaining project period should be concentrated on the needs for the Lake management by the beneficiary countries. All academic types of activities should be concluded, no matter what may be their scientific interest, and it is important to avoid all activities that have no immediate utility, either in terms of intermediary results or in terms of final results exploitable for the joint management of the Lake.

3.3.2 Baseline studies

1. Finding. The evaluation mission finds that the project has produced only little documentation concerning the existing knowledge. The accomplished baseline studies, for example, are in fact limited to inventories of data sources and to the references of previous studies. The evaluation mission has particularly noticed the weakness of the baseline study concerning the legal and regulation framework, which is limited to a study from a distance consisting of the compiling the texts (of which most are outdated) that are available in the documentation centres of Great Britain.

2. Recommendation. Establish an updated database of the legal and regulation texts concerning water and environment in the countries of the Lake basin, in the region and at international level.

3. Finding. In the economic sector, the evaluation mission has noticed the lack of evaluation (even qualitative) of the Lake region: populations, income from the agricultural productions, fishing, industrial activities, services, etc. Yet, these data are necessary in order to direct certain functions of the resources management of the Lake, particularly the arbitration between the different uses of water according to their socio-economic advantages and the risks of degradation which they constitute.

4. Recommendation. It is necessary to make a study of the economic context of the Lake region and studies of the ”water” and ”fisheries” sectors.

5. **Finding.** Three years after the starting up of the project, the general hypotheses of the impact, which constitute the basis of the project, have still not been documented or evaluated based on the compilation of existing data. The special studies are still not sufficiently advanced to give indisputable results that could compensate this gap and they need substantial starting data to be optimised. The data should be compiled and the level of existing knowledge concerning the initial hypotheses of the impact must be documented (and constitute a starting data for the future working plan of the special studies). The improvement of the evaluation of the problems should be a continuous process usable for the prioritisation of the resulting management functions.

Priority recommendation: Complete the data bases regrouping the existing data and install them in the appropriate institutions

The data should be compiled and the state of present knowledge concerning the introductory hypotheses should be established (in order to serve as basis for subsequent studies). The improved understanding of the problems should become a continuous process allowing to refine the prioritisation of the management functions.

Priority recommendation: Make the synthesis of all the pertinent scientific knowledge acquired till now, which is necessary for the definition of the special studies and for the elaboration of management tools for the Lake

The evaluation mission considers that to date there is no summary presenting the basic data after control of their quality and in a way that allows the decision-makers of the riparian countries to exploit them. Consequently, the evaluation mission estimates that this work still needs to be done and that it should be prioritised before producing the other project results: special studies, convention, strategic action plans (see also priority recommendation No. 14).

3.3.3 Special studies

1. The evaluation of the special studies comprises a number of findings and recommendations related to the overall function, approach and achievements of the studies. These are dealt with in the following section and they should be seen as common to all the studies. More specific findings and recommendations for the individual studies are found in the subsequent sections.

3.3.3.1 General findings and recommendations

1. **Finding.** The project concept is based on three general hypotheses regarding environmental impacts threatening the Lake, namely:

a) changes in land use practises cause increased discharge of sediments to the Lake having impact on the biodiversity;

b) pollution deteriorates the water quality and impacts the biodiversity;

c) unsuitable fishing practices cause overfishing and impacts the biodiversity.

1. Considering the general development of human activities in the region as well as the importance of the Lake ecology and its unique biodiversity, the mission finds that these three hypotheses were all relevant for consideration as threats to the Lake ecosystem. They constitute a reasonable justification of the project idea considering the importance of the Lake and its biologic richness. However, at the time of the project formulation, none of the hypotheses were adequately documented in quantitative terms, implying that it was not known whether the Lake, under the existing conditions, was significantly impacted by human activities.

2. It is moreover found that the project has provided limited progress regarding such a documentation since the point of departure. The fishing practices are certainly the most advanced (potentially) as they are able to use the substantive contributions of the LTR project. On the other hand, the threats constituted by the pollution and the sedimentation are still not always correctly documented.

3. It is noticed that 3 years after the project start the general impact hypotheses, on which the project is based, have not been evaluated through an exhaustive compilation of existing data, nor thanks to the special studies as these have hardly been initiated. Furthermore, it has not been possible to plan the data collection according to such a knowledge[21].

4. Set up more or less management functions in the post-project phase implies the use of financial and human resources, which are by definition limited in developing countries. This is the case for the Lake Tanganyika basin countries. Moreover, the needs for development in these countries are at a level where a maximum of discernment and technical insight is indispensable to avoid unnecessary constraints to the social and economic development, devoting important means to not critical problems. The use of the "Precaution" principle should be seen in this context and not as a necessity to protect oneself against any possible and conceivable risk. The project should therefore consider the verification (or rejection) of the basic impact hypotheses as a major issue as the problem identification is the one that defines future management functions and thereby the content of the SAP.

Priority recommendation: Treat as a major problem of the project the question of verifying (or invalidating) the basic hypothesis concerning the environmental impacts that are threatening the Lake

Identification of the real problems and of their seriousness is the only way of defining the future management functions. These functions require financial and human resources. However, the resources of the countries in question are very limited in these fields. It is therefore necessary to act with much discretion in order to avoid weighing unnecessarily on the resources intended for the economic and social development, devoting important means to the resolution of minor problems. The application of the "precautionary principle" should be seen in this context.

1. **Finding.** Practically all the special studies have started very late and some parts have not started yet. The point of departure for the technical studies was a methodology workshop in August 1997 and most field-work has begun in 1998. Considering the lack of precision of the existing literature, the evaluation mission finds that the special studies play a major role in the verification (or rejection) of the basic impact hypotheses as well as in the development of future monitoring strategies. The special studies, as planned at the origin of the project, therefore constitute a prerequisite for the development of the SAP.

Priority recommendation: Maximum effort should be laid in a timely implementation of all the special studies and the overall planning of activities shall assure that they can provide the necessary background for the Strategic Action Plan.

[21] It shall be noted that the amount of available data varies very much for the different studies. Thus, for pollution and sediment discharges very few data exist. On the other hand, it seems that substantial amounts of data relevant for assessment of fishing practises and species distribution in lake exist (from the LTR project and numerous taxonomic studies)

1. The evaluation mission has noticed a certain lack of precision in the overall view of each theme of the special studies and a general lack of knowledge of this overall view has been noticed among the national operators. As mentioned above, this is due primarily to:

- the position of the special studies in the general scheduling of project activities and to their missing connection with the other outputs of the project. This problem should be solved as a result of the modifications that were required during the TDA workshop of Lusaka;
- the absence of synthesis of initial data supporting the special studies. This problem should be solved if the recommendations on this subject are applied;
- the low level of involvement of national specialists in the definition and interpretation of the special studies. This problem should also be solved if the relevant priority recommendations are applied.

Besides these reasons, the evaluation mission points out that the present documents defining the special studies are presented as ”standing instructions” to be followed rather than as arguments about the ”why” and the ”how” of these studies.

Priority recommendation: Prepare a document (as a supplement to the present ”standing instructions” concerning the sampling and the laboratory work) on the overall technical approach and on the way the collected data may contribute to a better knowledge of the problems and to the development of the future management tools.

The activities should be prepared in collaboration with the national counterparts in order to guarantee that:

1. *the approach followed by the project is clearly understood by the key persons of the levels in question:*

   Fieldwork → Data compilation → Assessment/Evaluation → Management

2. *the local knowledge is not neglected but is used in an optimum way;*
3. *the scientific approach itself is transferred to the involved national institutions.*

1. **Finding.** One of the essential objectives of the project is to create a regional collaboration framework between the riparian countries of the Lake Tanganyika. It is desirable that the terms for such a collaboration are tried out as soon as possible during the project phase and taking advantage of the resources granted by UNDP/GEF. However, the evaluation mission has noticed an unsatisfactory communication between the national teams working on the same study themes in the four countries. The following priority recommendation completes the priority recommendations concerning the possible intervention of national experts in other countries than their own, aiming at a better appropriation of the project methods and results by the nationals. At the same time, it also supports a reinforcement of the regional institutional framework.

Priority recommendation: Prepare and implement before the end of the project sustainable mechanisms/procedures for professional exchanges between the national experts in order to meet from now on the future needs for exchange of information, of experiences and of continuous harmonisation.

(158a) As a supplement to these general aspects of the special studies, the evaluation mission has paid attention to each component of the special studies supposing that the scheduling of the results and consequently of the project activities was put back in a logical order.

For each theme of the special studies the evaluation mission has examined the following questions:

1. their rationale;
2. the pursued goals, the methodology, etc.;
3. the present state of work;
4. the special points (methodological, scientific or technical) resulting in findings and/or recommendations.

3.3.3.2 Sedimentation special studies (SSS)

1. **Hydrology:** the sediment special studies (SSS) include the hydrological studies that do not appear as such in the project. In this connection, the evaluation mission estimates that a particular importance should be paid to the establishment of the hydrologic assessment of the Lake. Actually, this assessment is one of the fundamental basic data of the pollution and sedimentation studies which has not been granted the desired importance due to its integration in the other components.

2. **Recommendation.** Treat the hydrologic assessment of the Lake as a completely separate question, integrating the results of the FAO/Finnida study on the sediment dynamics.

3. **Rationale.** The Sediment Special Study is based on the hypothesis that changes in land use in the Lake catchment result in increased soil material run-off. The material (suspended or dissolved solids) is then carried by the rivers and discharged into the Lake where it constitutes a threat to the living organisms in the water column (e.g. by increased turbidity) and at the Lake bottom when the material deposits here. The project approach includes a number of activities to verify (or reject) this hypothesis:

- Satellite monitoring of lake wide deforestation to establish trends of deforestation and sediment discharge with time and seasonal peaks of discharge.
- Quantification of sediments currently entering the Lake with indication of seasonal variations (measurements of flows and sediment discharges).
- Tracing fate of particles discharged into the Lake i.e. vertical and horizontal transport (sediment cores, hydraulic studies, measurements of sedimentation, modelling).

- Detailed sedimentation and sediment impact studies including water column impacts on phyto-plankton, zoo-plankton and of fish communities as well as impacts on benthic fauna (based on water and sediment samples).

4. **Status of Results.** The initial Baseline Review Report for the Sediment Special Study was available in January 1996. Hydrodynamic investigations were made in late 1996 – early 1997 and a report: "Flow, Thermal Regime and Sediment Transport Studies in Lake Tanganyika" was available in 1997 (see § 3.2.4). One of the results is a hydrodynamic model capable of simulating horizontal and vertical transports of sediments (and other conservative substances) in the Lake. The model has not yet been installed in the region and has not been physically available for the evaluation mission.

5. Except from the hydrodynamic study (1996-97) the actual data collection from the field has started only recently. Thus, in Zambia and Tanzania the activities started in early 1998 and in Burundi around the middle of 1998. D.R.Congo is still awaiting an improvement of the political situation. This implies that only few data has been collected until now. A station for receiving NOAA satellite images has been established in Kigoma (LARST, see annex 4) and made operational in early 1998.

6. A large number of sediment cores have been collected in January 1998. The Project is still awaiting the results from Arizona University.

7. A GIS system has been developed in UK; it has not yet been installed in the region and has not been available for the evaluation mission.

8. **Finding.** The evaluation mission finds that the overall strategy of the sediment special study is not clearly documented, i.e. how the study will enlighten the cause/effect relationships and which assessment tools will be used. However, the evaluation mission has been informed by the SSS scientific responsible that the approach included the set-up of an operational management system based on catchment models according to the following process:

Using satellite data and GIS as well as transport data
↓
Sediment distribution in the Lake (model)
↓
Impact on biodiversity

The system will be able to simulate the effects of different scenarios of land developments in the basin and be at disposal for a future management organisation. The evaluation mission agrees on this strategy.

9. **Recommendation.** It is recommended that the project elaborates a technical description on the scientific strategy for (quantitative) assessment of the impacts from excessive sediment discharges on the Lake ecosystems. The foreseen management tools system shall be described, and as far as possible, be developed in collaboration with the future users. Elements like databases, GIS, and models should be installed and used in the region as soon as possible.

10. **Finding.** The sediment dating data were not available yet at the time for the evaluation mission. The mission finds that the dating of sediment cores is a key element in the assessment of the sedimentation rate during recent periods and possible increase of sediment discharges due to the human occupation of the basin. This is the only method enabling a retrospective evaluation of the development of sedimentation. Therefore, the results from this part of the study should form the basis for monitoring strategies as well as prioritisation of management interventions.

11. **Recommendation.** The dating analyses of sediment cores should be finalised as soon as possible, and the results used in the final programming of activities under the Sediment Special Study. In order to ensure the transfer of knowledge, the dating analyses should associate the regional scientists with the scientists of the University of Arizona.

12. **Finding.** The evaluation mission finds that the hydrometric programme is professionally run by the involved water departments and university departments and that it is progressing well. But the start has been late. Some scales have not been installed yet (particularly in Burundi). The evaluation mission considers that the time left for measurements is relatively short to obtain reliable rating curves for level/flow calculations.

13. **Recommendation.** To assure that a maximum of corresponding water level and flow measurements is available for the establishment of water level/flow relationships, the mission recommends to measure (at least) the relative water levels at the time of flow measurement where scales are not yet installed. The relative water levels can later be converted to actual levels (when scales are in place).

14. **Finding.** The evaluation mission finds that the measurements of suspended solids transports are made professionally, by the responsible teams. However, no quantified discrimination between organic and inorganic substances is allowed in the work programme. Excessive loads of organic matter cause other impacts on the Lake ecosystems than loads of inorganic material. Moreover, the two fractions spread differently in the Lake.

15. **Recommendation.** It is recommended to include Loss on Ignition (a simple analysis giving the organic fraction of Total Suspended Solids) in the programme for river water samples.

16. **Finding.** The evaluation mission considers that the objectives of mineralogical sediment analyses are not clear and that their results are not significant for the immediate objectives of the project. Furthermore, the operative methods that have been used do not allow the analyse the finest fractions and the local laboratories (X-ray diffractometers, clay preparation) are insufficient for making routine analyses in this field.

17. **Recommendation.** The evaluation mission recommends to justify the mineralogical analyses by arguments, which have not yet been presented, and modify the operating methods (and to justify the quality of the results), or to simply give up these analyses which would simplify the working plan of the SSS.

18. **Finding.** The SSS programme is not found coherent on transports of dissolved substances and there is no sustained description explaining the end use justification for the actual choice of parameters. One example is the choice of nutrient elements, which is not the same in all riparian countries. The fact that many freshwaters in Africa suffer from increasing eutrophication due to

land based nutrient sources, and that the sensitivity of Lake Tanganyika ecosystems to increased nutrient loads is not known, emphasises that this problem cannot be overlooked in a future water quality management programme. In order to assess the tendencies of transporting N and P to the Lake, it is necessary to make a global estimation based on measures (harmonised between the countries) of the representative loads.

19. **Recommendation.** It is recommended that the analyses of river transports be made coherent between the countries and with the objectives of the study, meaning that the actual choice of parameters is directly related to the assessment methodologies. The evaluation mission recommends moreover that a systematic assessment of the trends in nutrient inputs to the Lake be included in the study, requiring routine assessments of transports of Total Nitrogen, Inorganic Nitrogen, Total Phosphorus, Orthophosphate, and Silicate.

20. **Finding.** The evaluation mission finds that the programme is not fully coherent when it comes to impact studies on e.g. invertebrates and phyto-plankton and finds that assessment methods are not finally identified. Moreover, the mission is not convinced that the sampling strategies chosen (relatively few stations near the river mouths sampled currently) will turn out to be optimal. Since the samples are taken from gradients of impacts (which moreover changes in time), the results risk to show a very high variability from campaign to campaign, which may hamper the interpretation of the results.

21. **Recommendation.** The project should describe more specifically the impact hypothesis to be tested and the assessment methodology to be used. As for the sampling strategy, it is recommended that the project considers if more information could be obtained by fewer campaigns, but with a better spatial coverage of stations around the river mouths - describing the actual extent of the gradually impacted zone.

3.3.3.3 Pollution special studies (PSS)

1. **Rationale.** The logic behind the Pollution Special Study is based on the hypothesis that the Lake may receive pollutants from human activities at levels where the ecosystems are impacted. The project approach includes the following elements (briefly quoted from the NRI proposal):

- Assess the spatial and temporal variation of the state of pollution in the Lake;
- Estimate (where possible) the rates at which pollutants from the identified sources enter the Lake;
- Forecast the effects of pollution on the biodiversity;
- Estimate the levels of certain pollutants that could be sustained by the Lake without loss of biodiversity;
- Formulate strategies for controlling the types of pollution known to have a deleterious effect on the biodiversity;
- Enable the riparian countries to maintain, beyond the end of the present project, monitoring on the pollution status and its impacts to the biodiversity, and to implement pollution controls;

- Develop new (and strengthen existing) links between this project and other pollution assessment and control studies on Lake Malawi and Lake Victoria as well as on Lake Tanganyika itself.

2. At the inception workshop the following types of pollution were considered important in defined particular areas :

- domestic waste water;
- industrial waste water;
- oil products, fertilisers and pesticides;
- heavy metals;
- contaminants associated with sediments carried by the water (rivers);
- non human organic waste, for example from the refinement of sugar cane;
- atmospheric pollution – wet and dry deposits;
- pollutants from river transports.

To determine the current impact, the Special Studies Work Plan concentrate on comparison of pollution levels/biodiversity in selected paired areas expected to be respectively impacted/not impacted.

1. **Status of results:** The initial baseline review report for the pollution special study was available in January 1996. Laboratories were established in Kigoma and Mpulungu in the beginning of 1998. The actual data collection from the field has started only recently. Thus, Zambia and Tanzania started (on simple analytical parameters) in early 1998 and Burundi in the middle of 1998. Screenings of heavy metals in sediments and biota have been ongoing in Kigoma in 1998. Congo is still awaiting an improvement of the political situation. This implies that only few data have been collected till now.

2. **Finding.** The evaluation mission finds that the overall strategy of the study is not clearly documented, i.e. how the study will enlighten the cause/effect relationships and which assessment tools will be used. At the same time, the evaluation mission recognises that field studies of the direct impact of pollutants on the species or ecosystem level are very difficult and time/resources consuming. The major constraints are the following:

3. Direct measurements of hazardous pollutants (heavy metals, pesticides, oil-products) require expensive and sophisticated analyses, which are not available at the lakeside laboratories. This means that only a limited number of such analyses will be feasible. Even in cases where such pollution is actually present, analysis on water samples (from the Lake as well as from the outlets) will be of limited value due to a very high variability of concentrations (in time and space) unless a very high number of samples are collected.

4. Effects of e.g. hazardous pollutants may be suddenly lethal or chronic implying that biological functions like e.g. reproduction are affected. Due to a high natural variability only very strong effects may be detected by investigations of specific compositions. Moreover, the interpretation of comparing “polluted” and “non-polluted” areas may be disturbed by natural spatial differences of the ecosystems.

5. **Recommendation.** It is recommended that the project elaborates a technical description of its scientific strategy for quantitatively assessment of impacts from pollution discharges on the Lake ecosystems. Technically, the evaluation mission recommends:

- Primarily that the PSS in all four countries focus on quantitative estimates of the pollution sources. Where direct data cannot be obtained, estimates of loads based on e.g. industrial production figures may be used. This exercise should be seen as an essential tool for a first screening of potential threats. Using the hydrodynamic model, the expected concentration levels in the Lake can be estimated (based on the estimated loads), and the potential impact areas established based on effect values derived from the extensive literature on ecotoxicological effects from known pollutants.
- Secondly, it is recommended to focus on pollution indicators in the Lake such as heavy metals, pesticides, and oil products in stable matrices where accumulation may occur e.g. sediments, bivalves, fish, etc. (as it is being done in Kigoma). The levels found should be compared to levels from the literature (e.g. Förstner and Whitman 1981, who have examined 87 lake sediments mostly from remote areas).

6. **Recommendation.** Where indicators show levels, which cannot be directly related to known sources, special programmes to identify the sources will be necessary. Eutrophication impacts and oxygen demands from excessive organic discharges should be included if deemed relevant from nutrient load estimates.

7. **Finding.** The evaluation mission finds that the PSS programme is not coherent when it comes to analytical methods, QA and use of equipment. Although the same packages of equipment have been delivered to a several of the involved laboratories, different methodologies are used and no comparable QA systems exist.

8. **Recommendation.** It is recommended that the harmonisation of analytical methods be assured to the extent possible. Anyway, performance tests should be made to clarify to what level of reliability the individual laboratories work. A coherent (and simple) QA system should be set-up and monitored. Intercalibration exercises should be performed between all involved laboratories doing comparable analyses.

9. **Finding.** The evaluation mission has no knowledge of actions promoting the development (or reinforcement) of links between this project and other pollution control studies concerning the lakes of the region.

3.3.3.4 Biodiversity Special Studies (BioSS)

1. **Rationale.** According to the Prodoc, the Biodiversity Special Studies (BioSS) aim at determining the patterns and structure of the biodiversity in the Lake, focusing on the proposed national parks and other conservation areas. This is done to assure that strategic areas of the Lake are protected in order to avoid detrimental losses of the unique species and ecosystems existing in the Lake. The project approaches include four activity areas for the BioSS:

- Review of current levels of biodiversity in the Lake
- Identify the distribution of major types of habitat, with particular focus on existing and suggested protected areas

- Suggest priority areas for conservation, based on existing knowledge and recommendations from other special studies and supplemented by additional survey work, where necessary
- Develop a sustainable biodiversity monitoring programme.

2. **Status of results.** The Biodiversity Special Study review report was available in January 1996. After training of divers in late 1997, field activities have been initiated in all four countries, but progress is slow. A data base system has been developed in UK by the NRI Consortium in early 1998, but has not yet been introduced in the beneficiary countries.

3. **Finding.** Although it is stated in several reports that large amounts of taxonomic data exist from earlier studies, a database and a first attempt to assess the level of biodiversity on this basis is not available after three years of project implementation. This implies that the planning of the field studies has not optimally taken into account the existing knowledge.

4. **Recommendation.** It is of utmost importance that the database is finalised, updated with existing taxonomic data, and made available for the relevant institutions so that it can serve in the planning of field work.

5. **Finding.** The evaluation mission finds that the methodologies, which the project will use for assessing "the level of biodiversity", are not clearly described in the documents, but at the same time it acknowledges that the discipline is new and that approaches have to be tested on real data. However, a number of methods exist on how to quantify or compare species diversity and abundance (e.g. diversity indices, cluster analyses, factor analyses and other multivariate techniques). These techniques are not simple and it may require a substantial training effort to build the necessary capacity among the operators who are going to use them.

6. **Recommendation.** It is recommended that the project as soon as possible clarify its methodologies regarding "level of biodiversity" and initiate training in statistical assessments of species diversity and abundance. Since the Lake Tanganyika is unique in the world regarding endemic species, a special capacity for recurrent assessments of biodiversity must be assured in the region.

3.3.3.5 Fishing Practises Special Studies (FPSS)

1. **Rationale.** The starting hypothesis is that the exploitation of fish stocks in the Lake is extensive and is likely to impact the biodiversity of the fish communities. The Fishing Practises Special Study (FPSS) should identify possible damaging effects and propose mitigating measures if deemed necessary.

2. The project has defined three types of fishing:

- Subsistence fishing
- Traditional full-time fishing to generate an income
- Industrial mechanised fishing , with solid capital, using generally seines and distributing the fish on the large markets.

3. The approach adopted during the project inception workshop includes the following activities:

- assess the direct and indirect consequences of the fishing, based on the existing statistics (LTR data and other statistics);
- list the type of material used in the villages, the composition of hauls according to type of material and habitat, the total haul as well as the structure of the fishing grounds and the role of the fishing in the community (socio-economic);
- note the present quantity of fish in the fishing grounds using rapid assessment methods;
- make specific studies on the inshore habitats, particularly in the plant nursery zones and in the river mouths;
- analyse the dynamics of the coastal fish population and the links to the pelagic fishing grounds, using the models where it turns out to be appropriate;
- assess the business of ornamental fish, including the most affected species and habitats and the potential impacts.

4. **Status of Results:** During 1997 and 1998 the project has accomplished a great number of visits to Tanzanian and Zambian coastal villages. The results are documented in individual field reports (hence certain difficulties of exploiting these reports). The reports also contain socio-economic data. Field work has not yet commenced in Burundi and in D.R.Congo.

5. **Finding.** Among the three general working hypotheses of the project[22], the evaluation mission estimates that the pressure on the ecosystem from different types of fisheries may well be the most serious threat to the Lake's biodiversity at the actual moment. Consequently, the mission emphasises the importance of a thorough scientific background for the future management decisions concerning the Lake.

6. **Finding.** The evaluation mission has also noticed that the fishing sector is the one for which the largest number of substantial data already exist. This is due particularly to the existence of the comprehensive LTR project since 1992. Consequently, it was agreed at the Inception Workshop to make a first evaluation of the effects of fisheries based on existing official statistics, and particularly from the compilation work done by the LTR project. The mission very much agrees on this approach, but has not been presented to any report from such a work. Moreover, it appears that the LTR project has accomplished a comprehensive socio-economic study in 1997 including 923 interviews of craft fishermen, 431 interviews with processors/traders at 66 sites in Burundi, D.R.Congo, Tanzania, and Zambia.

7. **Recommendation.** It is recommended that the LTBP project compile the existing information on fisheries and fishing practises as soon as possible according to its own objectives and develop a work plan according to the identified gaps. It is likewise recommended that further work in this area be closely coordinated with the LTR activities planned for the period up to the year 2001 (see figure 3).

8. **Finding.** It appears to the evaluation mission that there is a widespread mix-up in the various documents of the project (including the field reports) regarding the sociological elements, the

[22] The basic idea of the project is that the biodiversity of the Lake Tanganyika is threatened by: (1) pollution; (2) sediment discharges due to changed landuse practices; (3) excessive and destructive fishing practices.

economic elements, and technical elements on fishing practises (and the elements concerning awareness and environmental education). The mission agrees on the approach that field works of FPSS and SE/EE can been combined in most cases for practical reasons. The fact that these activities are carried out together does not mean, however, that their results should be mixed up in the reports. Although inter-linked, they must be considered different disciplines with separate problems and methodologies. Moreover, the evaluation mission has noticed that from one operator to another and from one country to another the reports are not homogeneous regarding methodology and systematic. It will therefore become still more difficult to make a synthesis of the studies unless these faults are corrected as soon as possible.

9. **Recommendation.** It is recommended that sociology, economics and fishing practises are treated separately in the project reports and that future field trips are documented by individual reports for each special study. Moreover, there is a need for harmonised systematic field report formats in order to: (1) assure that all necessary information is obtained; (2) make the final synthesising work easier.

3.3.3.6 Socio-Economic/Environmental Education Special Studies (SE/EE SS)

1. In addition to the above mentioned concerning the mix-up with the FPSS, the evaluation mission regrets that the sociological studies, the economic studies and the environmental education actions are officially and systematically grouped within the activities and the results of the project. The evaluation mission finds that this is a mistake since it is in principle a matter of three different components even though they have some overlapping zones and even though the field missions may treat the three fields simultaneously. In spite of the fact that it is recommended to separate the sociological studies, the economic studies and the environmental development aspects for the rest of the project and taken into consideration the habits that have been picked up, they are treated together in the present evaluation report.

2. **Rationale.** Knowledge on the socio-economic conditions of the region will serve as a basis for identification of sustainable management interventions for the Lake. This knowledge should cover what is commonly called “socio-economic factors” in the lakeside communities as well as sectoral developments for which the social approaches are based on economics (for example industrial development). In order to be planned in the best possible way, the Environmental Education element should follow the socio- and economic studies and, as far as the fishing communities are concerned, after the FPSS. The purpose of the EESS is to pave the way in order to establish the necessary awareness and understanding in the communities for new practises less harmful to the biodiversity. For the moment, the project focus on the consciousness raising concerning the necessity of giving up certain fishing practices, but the EESS could as well concern other target groups: town-dwellers, farmers, industrials and, why not?, policy decision-makers.

3. **Finding.** The evaluation mission emphasises that it is important not to mix up the studies that are necessary to the design and the organisation of campaigns for consciousness raising and environmental education (which is certainly the role of the project) with the carrying out of such campaigns, which could also be the role of other operators (media, teachers, NGO, leaders, etc.)

4. According to the Inception Report, the socio-economic activities include:

- Study of potential tourism around the Lake;

- Socio-economic studies on representative lakeside communities;
- Enquiries to their awareness and expectations concerning the Lake and the LTBP project itself;
- Study of the possibility of other income generating activities, whether from tourism, fishing skills, or other sources;

- Detailed studies of all other sectors in each of the four countries.

5. **Status of results:** Concerning the lakeside communities, a rather comprehensive socio-economic baseline report exists (available January 1996), covering particularly Tanzania and Zambia whilst data from Burundi and D.R.Congo are sparse. As mentioned above, the project has accomplished a great number of visits to Tanzanian and Zambian coastal villages in 1997 and 1998. The results are documented in individual field reports which also contains data for the special study on fishing practises. Field work has not yet been initiated in Burundi and D.R.Congo.

6. **Finding.** The evaluation mission is very impressed by the establishment of village committees at the Zambian shore of the Lake. 47 operational village committees as well as a framework for inter-village representation and collaboration has been established in 1997-1998. This operation is inspired from other Zambian experiences of villages situated at the shore of artificial lakes such as the Lake Kariba. The pyramid system of representation and cooperation that has been worked out pleases the communities as well as the authorities[23]. The methodology used, including visits by the chiefs of the villages to other areas, meetings of Headmen, etc. appears to be very successful.

7. **Recommendation.** The project is strongly recommended to reproduce in the other countries the village committee approach used in Zambia.

3.3.4 Capacity building

1. **General finding.** The main reasons for the establishment of the GEF project are the presumption of the existence of serious environmental problems and the realisation of the necessity of creating local capacities "around the Lake" to deal with such problems. The evaluation mission therefore emphasises that a reinforcement of the capacities of the beneficiary countries has an absolute priority position in the project.

2. The capacity building includes three elements:

3) mobilisation of necessary human resources for a new type of management of the Lake and for its long term monitoring (§ 3.3.4.1);
4) equipment of the national structures (and if necessary of the complete Lake management) in order to be able to monitor the Lake and its basin (§ 3.3.4.2);
5) creation of a Lake management framework (concepts and principles, regional convention, strategic action plan, implementation of the complete Lake management); these questions

[23] The authorities even indicate that they receive much more approaches than before and that the demands arrive to them faster thanks to the system that has been worked out.

are being dealt with in § 3.3.5 and 3.3.6; the impact of the project on the national institutional frameworks is treated in § 3.3.4.3.

3.3.4.1 Training

1. **Status of results.** Table 7 below (based on the table prepared by the PCU) indicates the status of results concerning the training undertaken within the frameworks of the project.

2. **Finding.** Presently, the capacity building focus on the immediate needs of the project. The training of national experts is therefore directed towards the data acquisition and the equipment of the national institutions has been defined according to these needs. Yet, the training of national experts should primarily be directed towards the fulfilment of the needs for a long term management and monitoring of the Lake.

Priority recommendation: Target the training towards the identified needs for the post-project phase

The evaluation mission feels that the training of national experts should not be limited to the immediate needs of the special studies. It should also and especially consider the needs for expertise in the post-project phase. To do so, it is important to define as soon as possible the outline of the future management entity of the Lake (mandates and job profiles) and to start training of a sufficient number of national experts to fill the planned jobs, taking into account an inevitable loss rate owing to predictable changes in career (for example by training two experts to the same type of job). At the present implementation level of the project the human resources of each country are sufficiently well-known to allow an immediate identification of the national experts to be trained.

1. **Finding.** A training cannot be successful unless the persons to be trained have been carefully selected according to their initial level and to the final level to be achieved (supposing that the training method has been designed with reference to the persons to be trained). Another constant problem of the training in the developing countries is to obtain a sufficient critical mass to make the field of recently created capacities independent of departures or (frequent) movements of staff. The project has not been an exception to these two rules. The training of divers (for the inventory and the monitoring of biodiversity) has only been successful with high level scientists at first and in a sufficient number to ensure that the teams did not break up right on the first departure. This problem has arisen particularly in Tanzania.

2. **Recommendation.** A particular attention should be paid to the selection of staff to be trained according to the pursued targets. The number of trained persons should be sufficient to ensure that the critical mass of qualified persons is reached or even better exceeded.

Table 7 (cont'd.) : Training undertaken until today by the LTBP project (including the needs for training as stated previously)

Dates	Target groups	Participants	Title of training	Training location	Training leader	Proj. Objectives addressed
01/98	Regional specialists Land science	BDI x 4, DRC x 1, URT x 4, ZAM x 2	Advanced bathymetric and sediment coring techniques	Tanzania	A. Cohen + internat. team assistants.	5
30/01/98	Local drama group			Lakeshore	Nsongela	3
04-05/98		Regional (4)	Workshop on Socio-economy/Environmental education	Mpulungu ?	Nsongela, Damaseke	3,4
05-06/98	University researcher	Evariste Nzeyimana (BDI)	Advanced methods of nutrient analyses	Free University of Brussels (Belgium)	Prof. Leo Goyens, Prof. Bayens	5
06-07/98	National BioSS experts	Francophone	BIOSS & follow-up to dive training	Bujumbura	Dr Vos, Gashagaza (2 weeks each) Martens, West, Allison (3 w/each)	5
?	Database researchers	? x 3	How to do literature searches and how to use databases			5
To be set 1998/99	BIOSS teams	BIOSS dive teams + terrestrial support	Taxonomic training for biodiversity monitoring	Cruise of Congo coast	SLA team	5
	BIOSS teams	4 Regional scientists		Belgium	Royal Belgian Institute of Natural Science	5
On-going	National experts	PSS field team	Pollution (on-the-job training	BDI, URT, ZAM	? + F. Chale	5
On-going	National experts	SSS field teams	Sedimentation (on-the-job training)	URT	Nkotagu	5
On-going	National experts	SSS field teams	Sedimentation (on-the-job training)	ZAM	Sischingabula	5
On-going	National experts	BioSS field teams	Biodiversity (on-the-job trainign)	BDI	Ntakimazi	5
	National experts	BioSS field teams	Biodiversity (on-the-job training)	DRC	Nshombo	5

	National experts	PSS field teams	Pollution (on-the-job training))	BDI	Gabriel Hakizimana	5

3.3.4.2 Equipment of national institutions

1. **Status of results.** The national institutions competent in the field of aquatic biology and water chemistry are equipped by the project. Except for D.R.Congo, where the CRH in Uvira has been almost completely pillaged or destroyed, the equipment is generally satisfactory. However, the material has been designed for the short term objectives of the project phase and not for a long term monitoring of the Lake and its basin. Furthermore, the key equipment like the database and the GIS have not yet been installed in the region and are therefore not available for the national experts and the authorities of the project.

2. **Finding.** The evaluation mission estimates that the equipment of the national institutions should not have the sole purpose of enabling them to assist the NRI Consortium in completing the project. The evaluation mission finds that a long term vision must be favoured. When that has been accepted a new question concerning the strategic order has to be dealt with by the project authorities: is it necessary, in order to ensure the monitoring of the Lake, to establish a new unique institution or a network of existing institutions?

3. **Recommendation.** The evaluation mission recommends to establish in future a network of existing institutions with a reference centre in Bujumbura and to equip these institutions according to the needs for long term management and monitoring. The establishment of such a network presupposes that all the involved institutions are working by the same methods and are using the same quality assurance systems. No matter what, the definition of supplementary equipment has to be based on a review of the capacities of the existing institutions and according to the results of the special studies.

Priority recommendation: Target the equipment of the national structures towards the needs of the monitoring post-project as well as against the intercalibration and the exchange of data

As for the previous recommendation, the evaluation mission feels that the equipment of the national structures should be designed not only according to the needs of the special studies but also according to the needs of monitoring of the post-project phase.

For that purpose, the equipment should avoid any double use and be homogenised to facilitate the intercalibration and the exchange of data between the riparian countries.

3.3.4.3 Effects of the project on the national institutional frameworks

1. At the time of the evaluation mission, the project has still not produced enough concrete results to have an impact on the national institutional frameworks. On the other hand, the dynamics of the project has mobilised the national institutional frameworks in each of the countries on the problem concerning the threats against the Lake and its conservation.

2. This mobilisation would have been even more significant (and/or stronger) if the choice of certain national operators by the project had respected the official mandates of the existing institutions (see § 3.2.6 and 3.2.7).

3. **Recommendation.** The Convention and the SAP in preparation should take into consideration the national legal and institutional frameworks and vice versa the institutional framework of each of the countries involved in the Convention and in the SAP should be harmonised with the new methods for joint management of the Lake and its basin.

3.3.5 Regional agreement (Convention)

1. **Rationale.** The elaboration and the implementation of a Strategic Action Plan (SAP) for the joint management of the Lake Tanganyika and its basin should result from a formal decision of the countries involved in the SAP. Actually, the application of any regional plan should not be envisaged as long as the authorities have not demonstrated their approval by a legally binding agreement. Furthermore, the limits of rights and obligations of the parties involved in the SAP should be carefully stipulated in an agreement constituting an international treaty and forcing the national legislation.

2. **Finding.** During the Lusaka meeting of February 25-27, 1998, it was agreed that the name of the regional agreement should indicate that the purpose of the agreement is the sustainable management of the Lake instead of being limited to pollution control and protection of the biodiversity of the Lake. A general consensus has been reached on the formulation: ”Convention for the sustainable management of the Lake Tanganyika basin”. In this spirit, and even though the definitive name of the legal instrument formalising the regional cooperation framework has still not been appointed, the evaluation mission proposes to call it ”the Convention” in order to avoid any periphrasis.

3. **Finding.** The progress of the process of elaborating the Convention has been slow for several reasons:

- the insufficiency of the baseline study;
- the lack of reference to the international and regional framework for integrated water resources management;
- the insufficient collaboration with the LTR project, presently preparing a regional agreement on fishing independently of the other aspects of resources management.

4. **Finding.** The questions of collaborating with the LTR project has already been examined in § 2.4.1 and 3.3.3.5. As for the conventions, at least 10 texts, more or less legally binding, ratified or not by the riparian states, contain principle measures concerning water resources management:

5) The African Convention for the conservation of nature and natural resources, signed in Algiers on September 15, 1968;
6) The Ramsar Convention from February 2nd, 1971, concerning the wetlands of international importance, particularly as habitats for waterfowl;
7) The Lagos Action Plan, adopted under the auspices of the AUO in 1980;
8) The Abuja Treaty of June 3rd, 1991 instituting the African Economic Community;
9) The Frame Convention of the United Nations on Climate Change, signed in New York on May 9, 1992;
10) The Rio de Janeiro Convention on Biologic Diversity of June 5, 1992;

11) The "Agenda 21" adopted by the countries participating in the Rio Conference contains a number of arrangements on management and Protection of fresh water resources and their quality, even though it is not legally binding (see in bibliography the reference G. Cougny, 1998, handed over to the PCU);

12) The United Nations Convention of June 17, 1994 (Paris) to combat desertification in those countries experiencing seriously drought and/or desertification, particularly in Africa;

13) More recently, the Convention on the law of the non-navigational uses of international watercourses has been adopted by the General Meeting of the United Nations and opened to signature on May 21, 1997;

14) Finally, three out of four riparian countries are signatories to the SADC Protocol on shared watercourse systems (§ 2.5.2 and annex 7).

15. **Finding.** According to the rules of international law, the measures of treaties, agreements and conventions ratified by a country apply to national law. It is therefore essential to make a list of the positive laws in the four (five) countries of the Lake Tanganyika basin in order to prepare the "touching-up" of the national laws that have to be made comply with international laws, including the future Convention.

16. **Status of results.** The reference documents for preparing the Convention by the project are the following:

- The baseline study (insufficient for the needs of the project);
- Legal and institutional measures for the management of lake and river basins: problems to be dealt with in a convention and possible approaches (LTBP, January 1998);
- Recommendations of the legal and institutional workshop concerning the agreement project (February 1998, Lusaka, draft).

17. **Finding.** Generally, the evaluation mission estimates that the current process of preparation does not refer sufficiently to the pertinent texts in the field and does not "stick" closely enough to the realities of the region and to the latest developments concerning shared water resources. The above mentioned document of January 1998 analyses numerous particular agreements but ignores the most important for the region, namely the SADC Protocol.

18. **Recommendation.** The "Convention" should be based on the above mentioned international agreements, already signed and/or ratified or in the progress of being so by the countries of the basin and in particular on the operational regional agreements. Furthermore, it should be avoided that the discussions on the Convention get lost in terminology problems. Finally, it is urgent to produce a preliminary project for the Convention and to communicate it to the governments since the SAP is subordinate to the Convention and not the opposite.

19. **Finding.** The evaluation mission points out that the process of elaborating and adopting a regional Convention is a long and difficult process. The present status of this component can only give rise to a legitimate concern from the political authorities of the beneficiary countries of the project. The cooperation in this field should have started much earlier.

20. **Recommendation.** The evaluation mission recommends that an informal meeting be organised as soon as possible for the project supervising ministers of the beneficiary countries (to

whom it would be wise to associate Rwanda) in order to confirm the principle of a regional Convention (including the agreement on fisheries which is being prepared by the LTR project) and to stipulate the outlines of its elaboration.

3.3.6 Strategic Action Plan (SAP)

1. **Rationale.** If the Convention is to define the cooperation spirit regarding the joint management of the Lake Tanganyika basin resources, the SAP should stipulate its letter. The main features of the SAP are correctly defined in the Prodoc, particularly its continuous development and its adaptability to obviously changing (natural and human) conditions.

2. **Finding.** The evaluation mission finds that the SAP is an appropriate tool for a sound, integrated, balanced and sustainable management of the Lake Tanganyika basin. Most of the characteristics adopted by successive workshops organised by the project can therefore be maintained. On the other hand, the evaluation mission estimates that the current process of preparing the content of the SAP (at a national or regional level) is illogical and counterproductive and risks to result in a plan which is too expensive for the riparian countries and does not even target the real problems.

3. **Recommendation.** The evaluation mission recommends that the principle of elaborating a SAP be confirmed but that the process be completely revised, especially according to the orientations of the regional Convention (including the integration of the LTR contributions) and the results of the baseline studies and the special studies. This recommendation is already mentioned in § 3.1.6.

3.3.7 General conclusion

1. **Finding.** Considering the importance of the Lake Tanganyika for the global biodiversity and the strong will of the riparian countries to lead to a new way of balanced and environmentally sound management of the Lake, the evaluation mission estimates that it would be very harmful to terminate the project in spite of the numerous imperfections that have been revealed during the evaluation. At the same time, however, the evaluation mission finds it impossible to achieve the expected results if the project continues in the same line as up till now.

2. **Finding.** In spite of the noticed slowness and hesitations, the general impression of the project progress is that the organisation is well established (even though it needs to be improved); the institutional arrangements have been well integrated by the national officials and the administrative and accounting procedures are running smoothly. However, until now the productivity of the GEF contributions have remained at a very low level and the consistency of the work is insufficient after a project period of three years. It is therefore logical to conclude as follows:

3) the project will not be completed within the prescribed time;

4) it will not be able to bear fruit unless the improvements, which the evaluation mission has tried to identify in the present report, are implemented.

Priority recommendation: Considering the present state of progress of the project and the

necessary time for these recommendations to give the expected effects and considering its experience with projects of this scope, the evaluation mission estimates that it is necessary to prolong the project period by approximately one and a half year, postponing the date of completion to December 31, 2001 in stead of July 31, 2000 as originally anticipated.

This prolongation should be made within the limits of the available budget.

For that purpose the Project Coordination Unit should submit to the Project Steering Committee a new working plan and a revised budget which comply with the new deadlines and follow the direction of the above mentioned recommendations.

4.

RECOMMENDATIONS

The recommendations included in the present report are recalled in table 8 hereafter.

The priority recommendations are marked by bold letters, indicating also their number of reference in the executive summary (PR 1, PR 2, etc.) just like the general recommendations corresponding to the lessons learned from the project (GR 1, GR 2, etc.).

Table 8 : Summary of recommendations

N°	Recommendation	Beneficiary	Comments	§
1	**PR 1: Refocus the project on the GEF concentration area *"International Waters"***	**PSC, PCU**		3.1.1
2	**PR 3: Ensure the consistency of the project with the principles for integrated water resources management and with the pertinent conventions in this field, at a global as well as a regional level**	**PCU**		3.1.3
3	**PR 2: Reformulate and stabilise the logical framework**	**PCU**	Take into consideration the redefinition of the objectives and outputs proposed in § 3.1.8	3.1.4. 1
4	Inform the national field operators of the use which will be made of their work and of the way the work will be evaluated	PCU		3.1.4. 2
5	Establish an new organisation chart taking into consideration the other recommendations concerning titles and mandates of the project organs	PSC, PCU		3.1.5
6	The organisation chart recommended by the evaluation mission	PSC, PCU	See figure 6	3.1.5
7	Change the titles of certain project organs: Regional Steering Committee → Project Steering Committee (PSC) National Project Coordinators → National Project Directors (NPD) National Steering Committee → National Follow-up Committee (NFC) National Project Coordinator's Assistant → National Technical Advisor (NTA)			3.1.5
8	**PR 4: Revise the organisation chart of the project, write down the mandates and/or Terms of Reference for each organ as well as detailed descriptions of each position**	**PSC, PCU**	Take into consideration the other recommendations relating to these organs or positions. Do not create new structures, nor new positions. Respect the hierarchical order and the precise functions of the different positions and organs. Make the titles of organs and positions comply with their real mandates. Respect the national institutional frameworks (do not entrust tasks to other national structures than those having the official authority)	3.1.5
9	**PR 10: Respect the logic order of the production of results**	**PCU**		3.1.6
10	**PR 20: Invite the Rwandan government to participate, as observer, in the next meeting of the Project Steering Committee and put the practical details of its association with the project on the agenda for this meeting**	**PSC**		3.1.7
11	Reformulate and restructure the objectives and outputs of the project until its completion, simplifying them and concentrating on meeting the fundamental needs of the beneficiary countries	PSC, PCU	See the new formulation in the text	3.1.8
12	Reinforce the role of technical control of the Execution Office according to the decisions that should have been made on the next meeting of the Project Steering Committee based	UNOPS		3.2.2

	on the present evaluation report			
13	Present at the next PSC meeting a table of the budget situation indicating the present situation as well as committed but still unsettled expenses, if any (for example by FAO?)	UNOPS		3.2.3

Table 8 : Summary of recommendations (cont'd.)

14	Reinforce the relations between the project and the UNDP offices and associate more closely the persons in charge of the programmes concerning the implementation and harmonisation of project activities to the ones of other development projects in their respective countries	UNDP, PCU		3.2.5
15	**PR 7: Establish which institutions are (or will be) mandated to fulfil each of the monitoring/assessment functions that are planned for the future**	**PCU**	In case some of the institutions that are not presently involved in the project should be responsible for some of these functions, a plan should be prepared and implemented in order to involve them as soon as possible. In case some of the present mandates should be modified (for technical, economic or practical reasons or for specific reasons in relation to the needs of the Lake management) there should be taken initiatives to make the necessary institutional (and statutory) changes.	3.2.6
16	**PR 5: Involve the nationals further in the definition of the work programmes**	**PCU**		3.2.7
17	Promote the progressive taking over of responsibility of coordination tasks by national experts	PCU, Govts.		3.2.7
18	**PR 6: Make the best qualified national experts at regional level work in close relationship with the recently recruited facilitators**	**PCU**	Identify the best qualified and well-known national experts at regional level in the different fields of the project.	3.2.7
19	Make local specialists intervene in other countries than their own in the same capacity as the expatriate facilitators and in close collaboration with these	PCU		3.2.7
20	Form two-person teams "expatriate facilitator + local specialist) in the four main fields of the special studies (pollution, sedimentation, fishing grounds, socio-economy)	PCU		3.2.7
21	Reduce the expenses for (expatriate or national) expert missions for participating in project meetings to a minimum, taking into consideration the achievement of the expected project results	PCU		3.2.8
22	Reduce the charging of time of expatriate experts on the project budget to works carried out in the region, with the exception (to be defined by UNOPS and the NRI Consortium) time for preparing and writing reports, if necessary	UNOPS, PCU		3.2.8
23	**PR 18: Move back the project head office to Bujumbura as soon as the two conditions, which makes it possible, have been fulfilled: lifting of the curfew and of the embargo**	**PSC**	The condition concerning the embargo has been fulfilled on January 22, 1999	3.2.9
24	**PR 19: Start elaborating immediately the scenarios concerning the restarting of activities in D.R.Congo.**	**PCU**	Since the human resources are already in place, the PCU should pay a special attention to the procedures of a rapid transportation and installation of the necessary logistics in Uvira.	3.2.9
25	**PR 12: Direct the production of project results towards the needs for a joint management of the Lake.**	**PCU**		3.3.1

26	**PR 14: Complete the data bases regrouping the existing data and install them in the appropriate institutions**	**PCU**		3.3.2

Table 8 : Summary of recommendations (cont'd.)

27	**PR 11: Make the synthesis of all the pertinent scientific knowledge acquired till now, which are necessary for the definition of the special studies and for the elaboration of Lake management tools**	**PCU**		3.3.2
28	Make an up-dated database on legal and statutory texts concerning water and environment in the Lake basin countries, in the region and at international level	PCU		3.3.2
29	Make an economic study of the Lake region and sectoral studies of the "water" and "fishing" sectors	PCU		3.3.2
30	**PR 13: Treat as a major problem of the project the question of verifying (or invalidating) the basic hypothesis concerning the environmental impacts that are threatening the Lake**	**PCU**		3.3.3.1
31	**PR 15: Make a real effort to implement the necessary special studies as soon as possible in order to allow them to constitute the background for the Strategic Action Plan**	**PCU**		3.3.3.1
32	**PR 16: Prepare a document (as a supplement to the present "standing instructions" concerning the sampling and the laboratory work) on the overall technical approach and on the way the collected data may contribute to a better knowledge of the problems and to the development of future management tools**	**PCU**	Prepare the activities in collaboration with the national counterparts in order to guarantee that: 1) the local knowledge is used in an optimum way; 2) the scientific approach it-self is transferred to the involved national institutions	3.3.3.1
33	**PR 17: Prepare and implement before the end of the project sustainable mechanisms/procedures for professional exchanges between national experts**	**PCU, Govts**	The objective is to meet from now on the future needs for exchange of information and experiences and for continuous harmonisation	3.3.3.1
34	Treat the hydrological assessment of the Lake as an entirely separate question and assign a particular importance to it	PCU-SSS	Integrate also the results of the FAO/Finnida study on the dynamics of sediments	3.3.3.2
35	Make a technical description on the (quantitative) evaluation strategy of the impacts of excessive contributions of sediments to the ecosystem of the Lake	PCU-SSS	The management tools system should be described and developed as far as possible in collaboration with the future users	3.3.3.2
36	Install the databases, the GIS and the models in the regions as soon as possible and train the national operators in the use of them	PCU-SSS		3.3.3.2
37	Complete the analyses on sediment core data as soon as possible and use the results in the final programming of activities for the SSS	PCU-SSS		3.3.3.2
38	Associate the scientists of the region with the scientists of the University of Arizona concerning the data analyses	PCU-SSS	Promote the transfer of knowledge	3.3.3.2
39	Measure (at least) the water levels in relation to the time of measuring the flows where there are still no water level measurers	PCU-SSS	The objective is to ensure the availability of as many corresponding level and flow data as possible for the calibration Later on, the relating measures could be converted into real levels (when the water level measurers have been installed)	3.3.3.2

40	Include the “Loss of ignition” in the analysing programme of water samples	PCU-SSS	The loss of ignition is a simple analysis showing the organic fraction of the total suspended matter	3.3.3.2

Table 8 : Summary of recommendations (cont'd.)

41	Justify the mineralogical analyses (and correct the operative methods and justify the quality of the results) or simply give up on them	PCU-SSS	The abandonment of the mineralogical analyses would simplify the work of the SSS	3.3.3.2
42	Harmonise the analyses of river transports between the countries and with the objectives of the study	PCU-SSS	The choice of parameters should be linked directly to the evaluation methodologies of the problems	3.3.3.2
43	Include in the study the systematic evaluation of the tendencies of discharge of nutrients	PCU-SSS	Routine evaluation of transports of total nitrogen, inorganic nitrogen, total phosphorous, orthophosphate and silicate	3.3.3.2
44	Describe more specifically the impact hypothesis to be verified as well as the methodology to be used	PCU-SSS	Sampling strategy: find out if it is possible to obtain more information by fewer campaigns but by establishing more stations around the river mouths	3.3.3.2
45	Elaborate a technical description of the PSS strategy for a quantitative evaluation of the impacts of pollutants discharged to the Lake ecosystem	PCU-PSS		3.3.3.3
46	Concentrate the PSS of the four countries on quantitative assessments of the pollution sources	PCU-PSS	This exercise should be seen as an essential tool for a screening of the potential threats. By means of the hydrodynamic model the predictable concentration levels in the Lake can be assessed (based on the estimated loads of pollutants) and the potential areas of impact can be established based on values in the literature concerning the ecotoxicological effects if the well-known pollutants	3.3.3.3
47	Use the assessment of pollution loads, based for example on industrial production figures, where direct data are not available			
48	Concentrate on the pollution indicators of the Lake such as heavy metals, pesticides and oil products in matrix of stable numbers where an accumulation could take place, for example sediments, bivalves, fish, etc. (as it is currently done in Kigoma)	PCU-PSS	The resulting levels should be compared to the levels in the literature (for example Förstner and Whitman 1981 who have examined 87 Lake sediments of which most were far away from the pollution sources). The effects of eutrophication and the oxygen demand caused by excessive discharge of organic matters should be included if deemed pertinent based on the assessments of the nutrient load. Where the indicators show levels which cannot be directly linked to the well-known sources, specific programmes will be necessary to identify the sources.	3.3.3.3
49	Harmonise the analytical methods as much as possible. Make performance tests to find out at which level of reliability the laboratories are working	PCU-PSS	A coherent (and simple) quality assurance system can be implemented and monitored. Intercalibration exercises should be practised between all the involved laboratories making comparable analyses	3.3.3.3
50	The database should be completed, updated by the existing taxonomic data, and made available for the competent institutions in order to ensure that the data are used as basis	PCU-BioSS		3.3.3.4

	for the field works			

Table 8 : Summary of recommendations (cont'd.)

51	Clarify as soon as possible the methodologies relating to the "level of biodiversity" and undertake the training in statistical assessment of the biodiversity and of the abundance of species	PCU-BioSS	Since the Lake Tanganyika is unique in the world because of its endemism, it is perfectly justified to create such capacities in the region to ensure regular assessments in the future	3.3.3.4
52	Compile as soon as possible the existing information on fishing and prepare a working plan according to the identified gaps	PCU-FPSS		3.3.3.5
53	Coordinate the compilation work with the planned LTR project activities for the period 1998-2001	PCU-FPSS		
54	Treat sociology, economy and fishing practices separately in the project reports and document the future field visits in separate reports for each special study	PCU		3.3.3.5
55	Harmonise the formats of the field reports in order to: (1) ensure that all desired information is collected; (2) facilitate the final work of synthesis	PCU-SE & EE		
56	Follow the Zambian approach of village committees in order to apply the principle in other countries	PCU-SE & EE		3.3.3.6
57	Pay a special attention to the selection of staff to be trained according to the pursued objectives	PCU	The number of trained persons should be sufficiently large to ensure that the critical mass of qualified persons is obtained or, even better, exceeded	3.3.4.1
58	**PR 8: Target the training towards the identified needs for the post-project phase**	**PCU**		3.3.4.1
59	**PR 9: Target the equipment of the national structures towards the needs of the monitoring post-project and towards the intercalibration and the exchange of data**	**PCU**		3.3.4.2
60	Avoid any double use of equipment and homogenise it in order to facilitate the intercalibration and the exchange of data between the riparian countries	PCU		3.3.4.2
61	For the needs for long term management and monitoring, give priority to the establishment of a network of the existing institutions (having their reference centre in Bujumbura) rather than creating a completely new	PSC	The establishment of a network supposes that all the institutions of the network are using the same working methods and the same quality assurance systems. No matter what, the definition of supplementary equipment must be based on a review of the capacities of the existing institutions and according to the results of the special studies	3.3.4.2
62	The Convention and the SAP, being presently prepared, should take into account the national legal and institutional frameworks and on the other hand the institutional frameworks of each of the countries involved in the Convention and in the SAP should be harmonised with the new methods for joint management of the Lake and its basin.	PSC, PCU		3.3.4.3
63	The "Convention" should be based on the above mentioned international agreements which have already been or are being signed and/or ratified by the countries of the basin and particularly on the operational regional agreements. Furthermore, it should be avoided that	PSC, PCU		3.3.5

	the discussions about the Convention get lost in terminology problems. Finally, it is urgent to produce a preliminary Convention project and to communicate it to the governments since the SAP is subordinate to the Convention and not the other way round.			

Table 8 : Summary of recommendations (cont'd.)

64	Organise as soon as possible an informal meeting between the project supervising ministers of the four beneficiary countries (to whom it would be wise to associate Rwanda) in order to confirm the principle of a regional Convention (including the fishing agreement under preparation by the LTR) and determine the outlines for its elaboration	PSC		3.3.5
65	Confirm the principle of elaborating a SAP but review completely the elaboration process, especially according to the orientations of the regional Convention (including the integration of the LTR contributions) and the results of the baseline study and the special studies.	PSC, PCU	See also § 3.1.6	3.3.6
66	**Prolong the project period by approximately one and a half year, postponing the date of completion to December 31, 2001 instead of July 31, 2000 as originally anticipated**	**PSC**	This prolongation should be made within the limits of the available budget	3.3.7
67	Submit to the Project Steering Committee a new working plan and a revised budget complying with the new deadlines and following the above mentioned recommendations	PCU		
68	**GR 1: Respect the format of the project document, not only in its form but also in its logic. The executive agents of the GEF (in this case UNDP) should make sure that the document is realistic and operational**	**UNDP, GEF**		5.
69	**GR 2: Communicate the contract documents describing the substance of the project to all the project parties, particularly to the beneficiary governments**	**UNDP, GEF**		5.
70	**GR 3: The monitoring of the implementation is essential for the success of a project. The contract documents (first of all the Prodoc) should stipulate a number of objectively verifiable indicators allowing to ensure the progress of the project**	**UNDP, GEF**		5.
71	**GR 4: Projects concerning capacity building should rely on a preliminary evaluation: (1) of the mandates of the national institutions; (2) of the local human resources**	**UNDP, GEF**	This evaluation should be included in the Prodoc and serve as basis for the mobilisation of national operators. In case of international call for tenders, the choice of contractor must take into account their ability to mobilise around their own expertise the national institutions and experts capable of taking in hand the results of the project at its completion.	5.
72	**GR 5: Projects concerning institutional creating should include a period for monitoring of the results, handled by the beneficiary countries and intended to test the structures and the procedures inherited from the project. During this period, the executive agent from the GEF (in this case UNDP) should continue a reduced monitoring in close collaboration with the involved governments.**	**UNDP, GEF, Govts.**		5.

5. LESSONS LEARNED FROM THE PROJECT

1. The evaluation mission has tried to deduce the general findings which might have general applications and first of all be useful for the other (present or future) GEF projects.

2. In the first place, the evaluation mission has noticed – and all the consulted parties have agreed on this point – that the origin of certain problems is to be found in the insufficiency of the project document. The criticised points are of different natures and are reviewed in § 3.1.4. Let us simplify things by saying that the ”good” intentions are not sufficient to make a ”good” project document and that the ”set-up” of such a project deserves a very careful examination of every line of the Prodoc. It is a pity that the deficiencies were not noticed during the instruction of the document and corrected before the project was adopted.

3. The GEF should ensure that the project formulation respects the norms of the executive agents (in this case UNDP) and that a description of the activities is elaborated with a logic scheduling and in sufficient details to make an implementation possible.

General recommendation: It is essential that the Prodoc format is respected, not only in its form but also in its logic. The executive agents of the GEF (in this case UNDP) should make sure that the document is realistic and operational.

1. The evaluation mission has also noticed that certain problems can be attributed to the insufficient communication between the executive agency and the beneficiary countries. The proposal from the NRI Consortium is very different from the Prodoc which can easily be explained by the bad quality of the latter. Such differences should have alerted UNDP and UNOPS and should have given rise to a consultation of the beneficiary countries. As the proposal of the NRI Consortium is an integrated part of the contract, it should – as a minimum – have been communicated to the beneficiary countries in order to allow them to appropriate the new project formulation.

General recommendation: The contract documents describing the substance of the project should be communicated to all the parties to the project, particularly to the beneficiary governments.

244. Another important lesson to draw from this project is that UNOPS as well as UNDP/GEF and the Project Steering Committee as a whole, suffer from their lack of vigilance at the time where the project started to drift. The process of elaborating the PAS has been ratified even though this process (which was adopted to produce some results in spite of the delays of the special studies ?) was not the one that was envisaged by the Prodoc, it had no scientific foundation and it was contrary to any logic.

General recommendation: The follow-up of the implementation is essential for the

success of a project. The contract documents (first of all the Prodoc) should stipulate a number of objectively verifiable indicators allowing to make sure that the project is progressing according to the schedule.

245. Without implicating the procedures for international call for tenders, nor the capacities of the consulting companies of the developed countries to run a project of this scope, the evaluation mission deplores that the choice of contractor did not take into account the executive arrangements with the beneficiary countries. The contractor was chosen on the basis of their interpretation of the Prodoc without defining the roles of the national institutions and without specifying the practical details for mobilising the national human resources, nor taking them into account in the process of going through the tenders. Consequently, the project could not start immediately after the signature of the contract as the national teams had not yet been formed around the contractor. It took a long time (in some cases more than two years) to identify and recruit the national experts that are working on the project today.

246. The evaluation mission is aware of the fact that the doctrine in this field has developed during the past years and that the same procedures are not applied today concerning the choice of contractor. Nonetheless, a special attention should be paid to the mobilisation of local resources when it comes to projects concerning institutional creating and capacity building.

General recommendation: Projects concerning capacity building, like this one, should rely on a preliminary evaluation:

1. **of the mandates of the national institutions;**
2. **of the local human resources.**

The evaluation should be included in the Prodoc and serve as basis for the mobilisation of national operators.

In case of international call for tenders, the choice of contractor must take into account its capacities to mobilise around his own expertise the national institutions and experts who are capable of taking in hand the results of the project at its completion.

247. Finally, in order to avoid any rupture at the end of the project, the evaluation mission finds that it would be judicious to plan a follow-up phase (for a period at least corresponding to the project period but handled by the national counterparts) during which the results of the project could be tested. If such a follow-up procedure is accepted beforehand by the beneficiary countries, it would be a guarantee for their engagement to implement the project results.

General recommendation: Projects concerning institutional strengthening, like this one, should include a period for follow-up of the results, handled by the beneficiary countries and intended to test the structures and the procedures inherited from the project. During this period, the executive agent from the GEF (in this case UNDP) should continue to make a reduced monitoring in close collaboration with the involved governments.

ANNEXES

Annex 1: Terms of Reference

TERMS OF REFERENCE OF THE MID-TERM EVALUATION MISSION

(Revised 30 October, 1998)

RAF/92/G32 - POLLUTION CONTROL AND OTHER MEASURES TO PROTECT BIODIVERSITY IN LAKE TANGANYIKA

BURUNDI, D.R.CONGO, TANZANIA, ZAMBIA

I Background

Lake Tanganyika is one of the world's great lakes and it has an important role in the economies of Burundi, D.R.Congo, Tanzania and Zambia. It possesses the highest biodiversity of any lake on earth. The lake is very vulnerable to pollution because of its natural characteristics, and there are presently few efforts to conserve its biodiversity. The most immediate threats to the lake environment and biota are pollution from excess loads of sediment and nutrients caused by erosion in the watershed, industrial and urban pollution including boat discharges, and intensive fishing with inappropriate methods. These problems and their effects are increasing, and others such as oil exploration and transportation on the lake cause concern.

This 5 year project aims to improve understanding of the ecosystem functions and effects of stresses on the lake system; to take action on all other measures necessary to maintain the health and biodiversity of the ecosystem; and to co-ordinate the efforts of the four countries to control pollution and to prevent the loss of the exceptional biodiversity of Lake Tanganyika. The project is implemented by a consortium of consulting firms lead by the Natural Resources International (UK), which was selected following a process of international pre-qualification and competitive bidding. NGOs have to be involved, particularly through community education and conservation, and the private sector through promotion of tourism and the control of industrial pollution. Provision will be made to continue the work of the project after its life by a regionally co-operating organisation.

The project's five [six[24]] immediate objectives are:

- ← Establish a **regional long-term management program for pollution control, conservation, and maintenance of biodiversity** in Lake Tanganyika.
- ← Formulate of a **regional legal framework** for cooperation management of the lake environment.
- ← Establish a **program of environmental education and training** for Lake Tanganyika and its basin.
- ← Establish tested **mechanisms for regional co-ordination** in conservation management of the Lake Tanganyika basin.
- ← Undertake some special studies to provide data as inputs to the establishment of a complete **strategic plan for long-term management**. They will add to the understanding of the lake as a whole and, in some cases, provide the baseline and framework for long-term research and monitoring programmes.
- \+ [Implementation and sustainability of the Lake Tanganyika Strategic Plan and incorporated environmental management proposals]

The estimated starting date was 1 January 1994, actual was 1 August 1995. This was partly due to civil unrest in the francophone countries. The generally slow start to implementation was also related to the need to establish or in some cases introduce for the first time the project to the principal collaborating institutions and other stakeholders in the region.

Completion date is 31 July 2000. The project duration is 5 years with UNDP/GEF contribution of US$ 10,000.000.

[24] The 6th objective was forgotten in the Terms of Reference (Note of the Evaluation Mission)

II Objective and Scope of the Evaluation Mission

2.1Review and assess the appropriateness of the project's concept and design, the project's effectiveness in realising its five objectives, and the extent to which they have contributed toward the overall development objective. If deemed necessary, the mission will comment on the relevance of the project objectives and activities and any other conceptual issue which could improve project execution.

2.2Review and assess the efficiency and adequacy of implementation arrangements and management of the project

In particular the mission should review the quality and timeliness of inputs and activities by the implementing sub-contractor, NRI, e.g. responsiveness of project management to changes in the project environment, work plans and budgets are prepared and followed, etc. The main contact person is the Project's Coordinator, Dr. Andrew Menz, resident at the project's Headquarter office at Dar-es-Salaam. Contact: **Error! Bookmark not defined.** Lake Tanganyika Biodiversity Project, P.O. Box 5956, Dar es Salaam, Tanzania, Tel: +255 51 118201 & +255 0812 782614 Fax: +255 51 118202 http://www.nri.org/Lake_Tanganyika

The mission should also review the UNOPS execution modality of the project: evaluate UNOPS involvement in the project (for questions to UNOPS, contact Ms. Karin Svadlenak-Gomez, Project Management Officer, Email: **Error! Bookmark not defined.** Tel. (212) 906 6248 Fax. (212) 906 6903 and/or Mr. Ingolf Schuetz-Mueller, Chief, Division for Environmental Programmes, Email: **Error! Bookmark not defined.** Tel. (212) 906 6220 Fax (212) 906 6903). The execution modality in terms of effectiveness and impact should be assessed, and the evaluation team should make suggestions on what is necessary to achieve effective project execution.

2.3Review the results of the project.

List the achievements of the project and assess their effectiveness in solving the perceived problems and limitations;

Examine whether the institutional set-up through the Regional Steering Committee and the National Steering Committees and Working Groups enhance full involvement of the countries and provide a sense of actual ownership by the countries (if not, what mechanisms might be used to accomplish this);

Assess whether the project is producing its outputs effectively and efficiently: identify the major factors which have facilitated or impeded the progress of the project in achieving its desired results;

Assess project impact: Determine the effect of the project on targets groups or institutions: the quality, usefulness and sustainability of the projects achievements and outputs in terms of improving the participating countries' capacity for a sustainable management of Lake Tanganyika;

Determine the degree of support given by the riparian Governments in integrating the project objectives and goals into the national development programmes and other related projects, and how well the project fits into national development policy;

Assess whether Government inputs in the four countries, at national and local levels, were sufficient and how they should be improved. The contribution of UNDP country offices to the project should also be reviewed.

2.4Review the special difficulties faced by the project.

Assess the extent to which the political and civil difficulties within and between the countries of the region have impacted project operations, both in terms of implementation and management of the project, and in terms of project impact.

Assess the extent to which these difficulties will limit the achievement of the project objectives.

Evaluate the alternative courses of action available including, but not limited to:

- closing down the project
- limiting project operations to certain countries
- continuing as at present.

2.5Review the effectiveness of the indicators put in place by the project, vis-à-vis of the objectives, the outputs and activities, including objectivity, measurability, methodology of analysis to determine the effect and the impact of the project, etc.

The mission will make recommendations to improve them if necessary.

2.6 Recommended future directions. (Specified in the Section III below)

III Conclusions and Recommendations

Based on all the above points, the evaluation mission should provide conclusions and recommendations.

The mission should record, in conclusion, any significant lessons that can be drawn from the experience of the project and its results, especially anything that has worked well, as well as anything that has worked badly and should be avoided in the future.

The mission should formulate the recommendations as follows:

3.1 Make general recommendations on the execution of the project and the ways to attain the project objectives upon completion.

3.2 In accordance with the general recommendations, make specific recommendations on the future course of intervention of the project.

3.3 Make recommendations on how to strengthen the achievements of the project.

IV Methodology

The evaluation team members shall familiarize themselves with the project through a review of a number of relevant documents prior to beginning travel to the region. (For a list of documents that will be distributed to the mission members prior to the start of the mission, see section VII below.)

In addition to these Terms of Reference, the evaluation team shall use the guidelines provided in the UNDP's *Handbook for Programme Managers: Results-oriented Monitoring and Evaluation* in undertaking the evaluation and writing its evaluation report.

Prior to beginning the mission, the evaluation team shall contact the UNDP GEF Co-ordinator for Biodiversity and International Waters, Africa, Dr. John Hough, for a pre-mission briefing. Contact: jo**Error! Bookmark not defined.** and **Error! Bookmark not defined.** Tel. (212) 906 5560 Fax. (212) 906 5974.

This mission will also play a role as a tool to strengthen capacity of the major players of the project, particularly the national/local institutions. The Project Coordination Unit will ensure that members of the national teams involved in the project will accompany the mission in each of the countries visited. Permanent consultations will be held with the national coordinators of said countries. As far as time allows, the mission will give feed-back on its findings and recommendations to the national project coordinators of each country visited, before departure .

V Duration, timetable and itinerary

The mission will meet the UNDP country offices, the Government officials in the capitals and will visit the four project bases in the field as well as the sites of field activities. The mission should also meet with representatives of local NGOs, the civil society and beneficiaries of the project. The mission will work in close collaboration with the representative of the sub-contractor NRI and the respective national coordinators in the four countries.

The mission will have a duration of up to **34 working days**, including travel time and reporting, based on the following tentative itinerary (NOTE: this itinerary allows for 6 working days/week with one day allotted for rest on weekends).

29-30 October 1998	Home-based desk-review of relevant documents (2 working days)
31 October 1998	Home-base - Dar-es-Salaam (1 working day)
31 Oct-6 Nov 98	Dar-es-Salaam (4 working days)
6 November 1998	Dar-es-Salaam-Nairobi (1 working day)
7 November 1998	Nairobi-Bujumbura (1 working day)
7-12 November 1998	Bujumbura (4 working days)
12 November 1998	Bujumbura-Kigoma (by charter flight or car travel, 1 working day)
13-17 November 1998	Kigoma (4 working days)
17-19 November 1998	Kigoma-Mpulungu (by boat Liemba, 1.5 working days)
19-21 November 1998	Mpulungu (2.5 working days)
21-22 November 1998	Mpulungu-Kasama (by project vehicle) + Kasama-Lusaka (1 working day)
23-27 November 1998	Attend TDA meeting in Lusaka as observers and begin report-writing (5 working days)
28 November 1998	Lusaka-Dar-es-Salaam (1 working day)
	Dar-es-Salaam – home base (evening flight)

29 November 1998 Arrive home base

29 Nov-4 Dec. 1998 Finalize evaluation report (2 working days)

Up to 3 additional days for revision after review by UNDP/UNOPS (and possibly a debriefing in New York, if deemed necessary by UNDP)

NOTE: If possible at time of mission, a brief stop in Kinshasa may be arranged and the itinerary modified correspondingly. Owing to the regional nature of the project and the difficulty of physical communication within the region, the itinerary on the whole may be subject to modification.

VI Reports

The mission is required to discuss and revise the draft evaluation report prior to his departure from the region. It is recommended that the format of the evaluation mission report follow the UNDP Guidelines for Evaluators.

In addition to addressing all the above-mentioned points, the report should contain the following Annexes:

- TOR
- Itinerary (actual)
- List of persons interviewed
- Summary of field visits
- List of documents reviewed
- Any other relevant material

The final version of the evaluation mission will be submitted to the UNDP/GEF HQ (Dr. John Hough) and UNOPS (Ms. Karin Svadlenak-Gomez), no later than one week after the end of the field work. The official version of the report shall be submitted in the English language with an executive summary in French, including the team's conclusions and recommendations. The report shall be submitted in five hard copies and in electronic format in MS Word or WordPerfect for Windows.

VII Documents made available to the evaluation team by UNOPS prior to start of mission

(All in electronic format as Word documents)

- Project Document
- UNDP Handbook Results-oriented Monitoring and Evaluation (1997) – electronic format
- Tripartite Review Meeting Report (January 1998)
- GEF Project Implementation Review 1998
- Minutes-Steering Committee Meeting 3 (August 1998)
- Minutes-Technical Advisory Committee Meeting (August 1998)
- Other Steering Committee meeting reports and relevant documents shall be made available to the evaluation team by the Project Coordinator.

VIII Composition of the mission

The mission will consist of:

One Environmental Economist, Team Leader. The expert will be familiar with Strategic Environmental Management Plans, preferably for International Water Projects, Educational Environmental programmes, Institutional building. 5-10 years of experience required, experience in similar projects in Africa is preferable.

One Ecologist with at least a Post- Graduate Degree in Freshwater Biologist, or Hydrological systems, and familiar with the ecosystems of the Great Lakes in Africa,. The expert will addressed scientific related issues of the project. 5-10 years of experience.

Both consultants shall be fluent in English and French.

Annex 2: Itinerary (actual)

GEC = Gérard Cougny; NHI = Niels Ipsen, ADD = Addis Ababa, NBO = Nairobi

Dates	Places		Observations
	Starting	Arriving	
Sat31 Oct.	NHI Copenhagen GEC Abidjan 20H00		Flight SR*** via Zurich Flight ET960, ET375, KQ480 via ADD, NBO
Sun 01 Nov.		Dar es Salaam	NHI at 09H00 & GEC at 12H45
Mon 02 Nov. to Wed 04 Nov.	Dar es Salaam		Project Headquarters
Thu 05 Nov.	Dar es Salaam 12H45	Nairobi 14H00	Flight KQ481
Fri 06 Nov	Nairobi 15H00	Bujumbura 15H40	Flight KQ472
Sat 07 Nov. to Thu 12 Nov.	Bujumbura		+ Visit to Rusizi Nat. Park and Mugere River (hydrological measurements & sampling)
Fri 13 Nov.	Bujumbura 07H35	Kigoma 09H15	Charter flight (via Kigali)
Sat 14 Nov. to Tue 17 Nov.	Kigoma		+ Visit to Gombe Nat. Park and Ujiji (hydrological measurements & sampling)
Wed 18 Nov. Fri 20 Nov.	Kigoma 17H30	Mpulungu 08H00	Boat Liemba
Fri 20 Nov.	Mpulungu		
Sat 21 Nov.	Mpulungu 15H00	Kasama 18H00	By project vehicle
Sun 22 Nov.	Kasama 06H30	Lusaka 17H30	
Mon 22 Nov. to Fri 27 Nov.	Lusaka		Attending Transboundary Diagnostic Analysis Meeting + Debriefing meeting with UNDP + Debriefing meeting with Zambian Authorities
Sat 28 Nov.	Lusaka 10H45	Dar es Salaam 16H30	Flight TC763 via Harare
Sun 29 Nov.	Dar es Salaam 08H00	Kampala 12H15	Flight TC772 via Kilimanjaro and Kigali
Mon 30 Nov. to Fri 04 Dec.	Kampala		Beginning the writing of the evaluation mission report
Sat 05 Dec.	Kampala 08H00	Dar es Salaam 09H40	Flight Y2*** + Debriefing meeting with Dr Menz at 17H00
Sun 06 Dec.	Dar es Salaam Dar es Salaam 06H15	NHI Copenhagen GEC Abidjan 19H00	Flight SR*** via Zurich Flight ET870, ET971 via Addis Ababa

Annex 3: List of interviewed persons

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Annex 4: Summary of field visits

Burundi

Places visited	Areas of interest
Project Office in Bujumbura	Laboratories, Library
LTR Project Headquarters in Bujumbura	Library
Rusizi River National Park	Hydrological measurements at the Rusizi river bridge Mouth of Rusizi River, Protected area, Wetlands
Rumenge River	Sediments sampling
INECN	Water Quality Laboratory
University, Dept. of Chemistry	Water Quality Laboratory
Ministry of Health	Water Quality Laboratory

D.R. Congo

Due to civil unrest in the region, the Evaluation Mission Team could not visit the Congolese bank of the Lake.

Tanzania

Places visited	Areas of interest
Gombe Stream National Park	Hydrological measurements, Sediments sampling, Protected area Main points: The park made an agreement with the project in 1996 on providing inputs to Sedimentation Special Study, Fishing Practices Special Study, Biodiversity Special Study, Environmental Education, and Socio-economics. Mr. Dattomax was together with his homologue from Mahale National Park three months in UK, May June1997 to attend the ICCE Environmental Education course "Vision to Visuals" concerning production of environmental education material. Park staff attended the workshop September 1997 on technical field and laboratory methods. BIOSS has not really started - the "Kigoma Problem" of divers. A socio-ecomic team made fieldwork in 1996 with the attention of Mr. Mtanga - he has not seen the report yet. The staff knew about the work on fishing practises led by Beatrice Marwa in 1996-97, but did not really know the contents. Sample were taken for Pollution SS every month but for which parameters I had to ask in Kigoma The hydrology part of Sediment Special Study had been launched and flow measurements were now ongoing for several months on the Gombe and Mwamgongo streams, moreover rain gauges had been installed up-stream to identify local rainfall patterns determining stream flow (Very professional). Water samples were taken and sent to Dar es Salaam - but the hydrology technician did

	not know what analyses they performed. The big deal for the park is to establish an underwater reserve extending the park into the lake - for conservation purposes, but not least to increase the attraction of the Park as a whole. The park is already earning some money (2000 visitors/year paying 100 USD each was mentioned). I seemed clear that this was the driving force for participating in the project. The Tanapa is currently discussing how the National Parks can include the offshore zone - the legal matters in this respect have to be sorted out. There was a general feeling that the activities of the project were very not continuous - experts arrived or workshop were held - and then nothing happened for long time.
LARST, Kigoma	Remote sensing, NOAA images capture and processing Main points: The activity started in October 1997, and a station fully equipped for capturing NOAA data has been installed. The station is run by 5 (shifting) staff members from National Meteorological Training Centre in Kigoma who have been trained during a course held by NRI in capturing NOAA data. The staff demonstrated to the consultant a full cycle of capturing and processing a NOAA Image. Technically the station works well, but the staff claimed that after the initial installation and training, the contact with the NRI experts had been very sparse. They capture the images, send them to England and hear no more. They moreover claimed that the images would be very useful for local meteorological purposes, but this was not possible since they had no budget for storage media. Finally, they could not understand why the station had been placed at TAFIRI premises far from their training centre resulting in needs for vehicles and transport costs. Comments: The procedures for capturing and processing images are followed mechanically from written instructions (cookbook). Software routines have been installed for very easy handling. It is not the impression that the staff fully understands what they are doing and would be able to solve a problem if it arises. Their comprehension of the further use of the data is very vague. They also feel themselves lost regarding technical assistance apart from what they had initially.

Zambia

Places visited	**Areas of interest**
Fisheries Department Office, Mpulungu	Water Quality Laboratory, Sediment Laboratory (grain size analysis)

Annex 5: List of consulted documents

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Annex 6: Genesis of the project

Annex 6.1: Recommendations of the 1989 International Symposium on resource use and conservation of Great African Lakes
Annex 6.2: Recommendations of the 1991 International Conference on the conservation of Lake Tanganyika
Annex 6.3: Project Selection Criteria Reference Sheet, 1992
Annex 6.4: Project brief, 1993

Annex 6.1: Recommendations of the 1989 International Symposium (English)

Annex 6.1: Recommandations du Symposium International de 1989 (Français)

Annex 6.2: Recommendations of the 1991 International Conference

Annex 6.3: Project Selection Criteria Reference Sheet, 1992

Annex 6.4: Project brief, 1993

Annex 7: Integrated Water Resources Management and Planning

It appears from the section2.5 that the countries in the Southern African region have, set clear objectives and have agreed on initiatives promoting the principles for sound and sustainable management of their common water resources. Moreover, a collaborative framework for water resources management in the region is being institutionalised and consolidated.

At the operational level, however, these good principles need to be translated into concrete action, which is not a straightforward task. The answer to this is often mentioned to be the ***Integrated Water Resources Management (IWRM)***. However, the concept of IWRM is widely debated and an unambiguous definition of integrated water resources management does not currently exist (neither globally nor in the Southern African Region). Hence, the regional and national institutions must develop their own practises using the collaborative framework emerging in the region when considering application IWRM. To guide the further work in this process a number of elements, which have been highlighted in the conceptual discussions on IWRM at the international level are given below.

General principles

Generally, the IWRM must be considered a set of optional tools dealing with development and management of water resources within a participatory and integrated approach, which recognises the guiding principles emerging from the process leading to the UN Conference on Environment and Development (UNCED) in Rio de Janeiro (June 1992). These principles, which have subsequently been confirmed and elaborated in a number of international fora since Rio, include:

Principle	Consequences
Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment	What is needed is a holistic approach to water resources management – one which links economic and social development to the protection of natural ecosystems.
Land and water resources should be managed at the lowest appropriate levels (= principle of subsidiarity)	Decisions and actions concerning water resources management should be taken by those who are affected by them. Depending on the nature of the issues, the forum might be at community level, catchment level, central or decentral administrative levels, international river basin level, etc.
The government has an essential role as enabler in a participatory, demand-driven approach to development	Legislation, structures and procedures should make up a framework within which there can be maximum participation, by all interested parties, in the analysis of problems, the decision-making and the taking of actions.
Water should be considered a social and economic good, with a value reflecting its most potential use	To encourage conservation and protection, the true economic value of water resources should always be taken into account when prioritising potential uses – without infringing the basic right of all people to have access to clean water at affordable prices.
Water and land use management should be integrated	The planning of both land and water development projects should take into account the interrelationships - and the fundamental way in which ecosystems regulate both water quantity and quality.

Women play a central part in the provision, management and safeguarding of water	Though women are so obviously active in providing and using water, they are far less involved in its management. Special efforts should be made to facilitate women's effective participation in decision-making forums concerned with water resources.
The private sector has an important role in water management	Also, special efforts should be made to sensitise private sector resource managers to the benefits of sound use of water – because, collectively, these managers have a significant impact on water resources.

The above mentioned recommendations and principles are very different in nature and should be considered as internationally agreed guiding principles for sound practises within water resources management. The concept of Integrated Water Resources Management - in contrast to "traditional" water resources management - could be considered as a management set-up which requires an integrated design at the technical/physical level as well as at the planning and management level:

Integration of quantity and quality in water resources management

Water resources management entails two closely related elements: Maintenance of adequate quantities of water of an adequate quality. Thus, rational water resources management can not be conducted without paying due attention to water quality aspects. It is important to notice this integrated relationship between water resources management and water pollution control since the deterioration of water quality reduces the available quantities of water for purposes with specific quality requirements.

Integration of land and water

An integrated approach to the management of land and water takes its departure in the physical phenomenon that the hydrological cycle comprises the transport of water between the compartments air, soil and surface water courses. As a result, land-use developments influence the physical distribution of water as well as its quality and must be considered in the overall planning and management of the water resources. The promotion of catchment and river basin management is an acknowledgement of this integrated approach since the catchments constitute distinct hydrological entities. Another aspect is the fact that water is a driving force for all ecosystems (terrestic as well as aquatic) and their requirements to water quantities and quality therefore have to be taken into account in the overall allocation and management of available water resources.

Cross-sectoral integration

The integrated water resources management approach implies that water related developments within all economic and social sectors should be taken into account in the overall management of the water resources. This means that the sectoral developments shall be evaluated for possible impacts on - or requirements to - the water resources and that such evaluations are considered when designing as well as prioritising development projects. Consequently, the water resources management system must include cross-sectoral information exchange and coordination procedures as well as techniques for evaluation of individual project with respect to their implications for the water resources.

The principle of seeing water as a social and economic good is essential here. It means that the economic value of the resources (as defined by the values of its competitive uses) is used to prioritise the different possible sector developments.

Integration of all stakeholders in the planning and decision process

The involvement of the concerned stakeholders in the management and planning of water resources is generally recognised as a key element for obtaining a balanced and sustainable utilisation of water. This implies that the IWRM concept must develop operational participatory approaches for planning and decision making. An important issue here is to identify and classify water resources management functions according to their (lowest) appropriate level of implementation, and accordingly to identify and mobilise the actually concerned parties at these levels.

Water resources management system and action planning

As IWRM is a concept acknowledging certain principles for sound and sustainable water exploitation and respecting the necessity for integration of the physical and socio-economic realities in the planning and management, proper implementation strategies as well as operational management structures and procedures must be developed to fit the individual requirements of the countries. Ideally, the development of such management tools in the various countries should contribute to a common ”catalogue” of management options reflecting sound practises which are applicable in different contexts.

The general IWRM approach recognises that complementary elements of the water resources management system must be developed and strengthened concurrently to fulfil the overall objectives. These are:

An enabling environment, which is a framework (of national policies, legislation, regulations and local by-laws) for encouraging sound management of the water resources and constraining potentially harmful practices

an institutional framework that allows for close interaction between different (regional, national, district and community) levels

planning and prioritisation capacities that will enable decision-makers to make choices between alternative actions based on agreed policies, available resources, technical assessments and the social and economic consequences

Additionally, the general concept includes some operational considerations. Without infringing the above mentioned general principles, the process of introducing IWRM should take into account the need to produce an action framework, which is operationally realistic in the present country context - and sustainable in the future by:

Fitting proposals to existing realities: The functions, structures, procedures and proposed actions are pragmatic in as much as they take into account the resource constraints existing in the country: limited resources, the existing institutional structures, and the management capacity available for implementation.

Designing structures to meet needs as they arise: Structures and procedures should be flexible enough to meet immediate needs and leave the possibility open for expansion whenever appropriate.

This implies that pragmatism and flexibility have to be built into the technical/managerial solutions as well as into the planning process itself. In Uganda, for example, the following stepwise approach has proved efficient for the action planning process:

1) Identify water resources issues, i.e. mismatches between availability/quality of the water resources and the quantity/quality requirements;
2) For each issue (or group of issues) define the extent of the problem - local, basin, national, regional – which gives the lowest appropriate level for management (provided that capacity for regulation exists at that level, see point 5 below);
3) Prioritise the issues according to severeness (necessity of intervention);
4) Identify management functions necessary to solve the problems;
5) Analyse if capacity exists (or can be established with reasonable inputs) with respect to management functions identified in point 4 for each management levels identified in point 2);
6) Reconsider functions and appropriate levels for management according to the result of point 5 and input requirements
7) Establish a prioritised list of management functions to be realistically implemented in short, medium and long term (action plan).

Several iterations of the steps 4-6 may be necessary before a final and realistic action plan is obtained. Moreover, the action plan should be seen as a dynamic instrument, i.e. an ongoing process with recurrent updates of the whole process to secure that available financial and human resources are directed towards solving issues from the top end of the priority list. In many developing countries the approach implies that a number of problems (due to capacity constraints) are not realistic to solve immediately and have to be included at the medium or long term level of implementation. Furthermore, it often appears that "the lowest appropriate level" is not that low because management capacity at local levels are often most limited.

When deciding on which management tools and instruments to apply to improve water resources management in a given situation, options within the three management system elements mentioned above: (1) enabling environment, (2) institutional framework, (3) planning and prioritisation. The choice must take into account the following underlying principles:

Balance the input of resources against the severity of the problem and available resources

Ensure sustainability

Seek win-win solutions (offering maximum gains), whereby environmental as well as other objectives are met

Balance the input of resources

This principle entails a reasonable input of financial, human or other resources to handle a specific problem, according to the priority and severity previously assigned to that problem. For instance, if

discharge of wastewater is concentrated at a few locations in a country or basin, leaving most regions/districts unaffected by wastewater discharge, and if this situation is anticipated to continue, there would be no need to build technical and administrative capacities to handle this problem in all regions/districts. Similarly, the treatment requirements and the threshold for the size of activities requiring a wastewater discharge permit might be more lenient, if only few dischargers exist and the water recipients show no symptoms of pollution.

Ensure sustainability

This principle has a bearing upon the methods and technical solutions for water pollution control that should be considered for application. In most developing countries possibilities for operation and maintenance of advanced technical equipment are very scarce or non-existing. Both among donors and recipients of projects there has been a tendency to favour quite advanced and sensitive technical solutions, even in cases where more simple and durable equipment could have solved the problem. This may have the consequence that entire development programmes fail to be implemented successfully. Thus, a general rule to be considered in many developing countries is: "Keep it simple".

Sustainability also entails building on existing structures, where appropriate, instead of building new structures. Existing institutions or methods have to some extent proven their viability, and allocation of resources for existing institutions is more likely to be continued than additional resources for new institutions to be allocated.

Seek win-win solutions

Win-win situations are created by applying instruments that lead to improvement both in water resources management and in other sectors (e.g., improved health, or improvements in economy). This means that the difficult balancing of environmental benefits versus other possible drawbacks is avoided. Economic instruments are often in the win-win category.

Regulatory vs. economic instruments

Compared with economic instruments, the advantages of the regulatory approach to water resources management is that it offers a reasonable degree of predictability about the control of a given problem, i.e., it offers control to authorities over *which* environmental goals can be achieved and *when* they can be achieved. A major disadvantage of the regulatory approach is, however, its inefficiency due to an insufficient capacity for enforcement. Economic instruments have the advantages of providing incentives to modifying behaviour of water users (or polluters), providing revenue to finance pollution control activities and being much better suited to handle non-point sources of pollution. However, an appropriate setting of prices and charges is crucial to the success of economic instruments but is often difficult to achieve.

On this background, it seems appropriate in most cases to apply a mixture of regulatory and economic instruments in controlling the use of water resources. In developing countries, where financial resources and institutional capacity are very limited, the most important criteria for balancing economic and regulatory instruments should be cost-effectiveness (how to achieve the objectives at the least possible costs) and administrative feasibility (do the countries have the necessary capacities to apply the regulations).