

**PROJECT PERFORMANCE EVALUATION REPORT**

**UNDP/GEF RAF/92/G32**

**POLLUTION CONTROL AND OTHER MEASURES TO PROTECT  
BIODIVERSITY IN LAKE TANGANYIKA**

**October 1997, Dar es Salaam**

## Project details

PROJECT REFERENCE: RAF/92/G32  
 PROJECT TITLE: Pollution Control and Other Measures to Protect Biodiversity in Lake Tanganyika  
 COUNTRIES: Burundi, DR Congo, Tanzania, and Zambia  
 EXECUTING AGENCY: UNOPS  
 DATE THIS FIRST REPORT: 21 November 1997  
 PLANNED DATE OF TPR: January 1998

### BUDGETARY DETAILS

TOTAL BUDGET FOR REGION: 10 million US \$  
 UNDP/GEF CONTRIBUTION: 10 million US \$  
 GOVT CONTRIBUTION: IN KIND

ESTIMATED STARTING DATE: 1 January 1994      ACTUAL: 1 August 1995  
 PROJECT COMPLETION: 31 July 2000

## *Summary of Conclusions*

1. In spite of a number of difficulties some foreseen, in form if not in magnitude, and others not foreseen, the project has made substantial progress. The Lake Tanganyika Biodiversity Project (LTBP) is both complex and ambitious and is clearly a “process” project that needs to adjust in order to accommodate lessons learnt. Experience over the last two years has exposed areas where change of emphasis or reallocation of resources is required and has resulted in the recommendations given in this report especially with regard to the way forward to the creation of a viable Strategic Action Plan - **the Lake Tanganyika Strategic Action Plan (LaTSAP)**.
2. Progress has not kept pace with the original schedule of activities developed at the Inception Workshop. At the start of the project an important contributory factor to this was the clear lack of any feeling of ownership (or indeed awareness and understanding) of the project by stakeholders in the region, owing primarily to the long hiatus between the signing of the project document by the recipient governments and the actual start of implementation. In addition the drawing together of the diverse groups of specialists and preliminary team formation by the consortium took some time and consequently the planning and initiation of early activities suffered unavoidable delays.
3. Apart from the preparation of the Baseline Reviews initial activities were, therefore, characterised by the bringing together and consolidation of the various components of the project team and its logistical support structure both in the UK and in the region. Moreover, efforts were made to draw in local institutions and other bodies in

preparation for the March Inception Workshop at which the ownership issues, regional responsibilities and project strategy were defined.

4. Subsequently the detailed planning, initiation and implementation of the special studies has in most areas demanded far more time and effort than anticipated. Resulting in too great a bias toward the technical special studies. The principal causes can be attributed to the manifestation of a number of the risk factors identified at the start of the project chief among them being:

a) Civil unrest in Burundi and the Democratic Republic of Congo (Congo). This has not only resulted in project activities in those countries being restricted to a limited number of visits by project consultants it has also hampered project attempts to develop the regional purview of the project through planned regional meetings especially the project Steering Committee. A notable exception was the Inception workshop in early 1996. In addition travel within the region has been severely hampered owing to the sanctions on Burundi.

Conditions in both countries whilst not ideal have improved markedly and following a very successful technical planning meeting for Congolese and Burundian participants a project office is now being established in Bujumbura to facilitate operations in the francophone region. Letters of Agreement are being drawn up to for collaboration with local institutions and equipment is being purchased.

b) Shortage of full time facilitators/advisors in the field. The project's developmental aim is that of institutional capacity building, consequently project staffing philosophy has been to use wherever possible staff currently employed in the institutions that are likely to play a key role in any future strategic management process for the lake. However the fact that there is such an emphasis on capacity building pre-supposes that there is currently a short fall in capacity in the key institutions. It is apparent therefore that project facilitators/trainers must come from outside the key institutions at least for the duration of the special study phase of the project. The original project structure provided for only two long term, full time facilitators/coordinators. Virtually all other staff regional or external are part time as far as the project is concerned. Some additional consultants have been contracted both from within the region and outside but the current level is still inadequate. This gap cannot easily be filled by short term consultants from the implementing subcontractors. Consequently, in spite of the concerted efforts of staff currently attached to the project from the consortium and collaborating institutions work in the field has not had the continuity of direction and facilitation that is required. We conclude therefore that more medium/long term experienced facilitators/trainers in the field are required for the following special studies; Socio-economics, Sediments, Pollution and Biodiversity.

c) Shortage of scientists/technicians in lake shore stations, to either undertake project activities or to be trained. Currently this applies to Tanzanian and Zambia as the situation in Francophone region is currently being assessed. Both Zambia and Tanzania have a number of large projects in the natural resources management sector

which compete for the available human resources and under current government restructuring processes in both countries the creation of new posts in departments key to the LTBP is difficult. Coupled with this has been the loss recently of some experienced scientists and technicians from both Kigoma and Mpulungu. To some extent the shortfall has been taken up by hiring local consultants and although this has had mixed success, this pattern will most likely need to continue for the medium term at least.

For a long term solution it is, of course, incumbent on the project to assist the relevant institutions both to define clearly the required human resources required and train established personnel or identify ways in which the necessary specialist input will be available to support a lake basin management system. The planned Institutional assessment and refining of the training strategy will be give added impetus to this process in the new year. In addition the directors of the concerned institutions and the project coordinator are investigating means whereby staff may be augmented. University students are a potentially valuable resource and fit well within the training and general awareness raising aspects of the project but are not sustainable beyond the immediate project duration, nevertheless this is a mechanism which should be utilised more.

5. In order to redress the bias mentioned in 4. above more emphasis must now be given to the broader institutional aspects of the project and the strategic planning process. A key factor in this will be the effectiveness of the National Working Groups and the National Coordinators. It is recognised that the National Coordinators have a crucial role in the project yet they can only dedicate a proportion of their time to this particular project and it is clear that some full time assistance is required to support the National Coordinators and the National Working Groups in each of the four countries if they are to provide effective and efficient support to the project. Such assistance could be provided through the employment of National Liaison Officers. These officers would be charged with assisting the National Coordinators improve project communications throughout the national project networks, they would act as secretary to the National Working Group and be responsible for ensuring that agreed actions and recommendations were followed up and they would also assist with liaison with the PCU. These persons would be contracted full time by the project from outside national institutions for as long as required within the project timetable.
6. Nevertheless, given the complexity of the project in practically all its aspects the original timetable was, to say the least optimistic, and much has in fact been achieved. Moreover, any losses that may have occurred from the apparent delays have been considerably offset through enabling the development of a thorough planning process which has helped in the further definition of a well defined set of special study work plans within a practicable project strategy. Much of the discussion underlying this strategy was presented in the Baseline Review documents and was further refined and augmented with the information gained during the Inception Workshop as presented in the Inception Report. Subsequently further understanding of the current circumstances

and requirements in the region with respect to the lake has resulted in the current formulation of the strategy given in this report.

7. The project is now progressing at an accelerating pace as more of the essential human and physical resources required are identified and put into place. Nevertheless given the constraints on project progress that have been encountered the current timetable for completion of the project is unrealistic if it is to include a substantial period to consolidate the Strategic Action Plan and initiate follow-on activities as originally envisaged. Noting also that project expenditure to date has been in line with activities rather than duration an extension of the project period should be considered.

### ***Summary of Recommendations:***

1. Now that the special studies are, in most cases, well established the emphasis should now move more toward broader aspects of institutional mechanisms required to develop and maintain a coherent and practicable Strategic Action Plan for the management of the lake.
2. It is recommended that the process leading to a Lake Tanganyika Strategic Action Plan proposed under Output 1.4 be adopted by the project
3. It is recommended that the role of the National Working Groups be strengthened through clear terms of reference and enhancement of their role in the planning process, and in addition that full time National Liaison Officers be appointed to support National Coordinators and the National Working Groups.
4. It is recommended that an in-depth Institutional analysis and assessment exercise be carried out as indicated under Output 5.6.
5. It is recommended that full time facilitators/trainers be placed in the field in the field, one for each of the following project special study areas; Socio-economics, Sediment studies, Pollution studies and Biodiversity studies.
6. It is recommended that the project period be extended to allow activities in the francophone countries to catch up with the rest and to provide sufficient time to achieve the goal of establishing an effective LaTSAP.

## **Project objectives and functions**

### ***Objectives of the project in the latest document***

#### **Immediate objective 1**

Establish a regional long-term management program for pollution control, conservation and maintenance of biodiversity in Lake Tanganyika.

**Immediate objective 2**

Formulation of a regional legal framework for co-operative management of the lake environment.

**Immediate objective 3**

Establish a programme of environmental education and training for Lake Tanganyika and its basin.

**Immediate objective 4**

Establish tested mechanisms for regional co-ordination in conservation management of the Lake Tanganyika basin.

**Immediate objective 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.

**Immediate objective 6**

The implementation and sustainability of the Lake Tanganyika Strategic Plan and incorporated environmental management proposals.

***The primary function of the project***

The goal of the project is the protection of biodiversity in Lake Tanganyika. This will be achieved via the project purpose which is to create a co-ordinated approach to the sustainable management of Lake Tanganyika. This in turn will be accomplished by increasing institutional capacity within the riparian states to monitor and manage threats to the lake.

***Outputs included in the latest project document*****Output 1.1**

Review all existing relevant data on Lake Tanganyika and its basin to provide platform for initial formulation of the Strategic Plan for the management of Lake Tanganyika.

**Output 1.2**

Inception Report based on all review data will provide bench-line data for the planning of the management program.

**Output 1.3**

A preliminary Lake Basin Strategic Plan will be drawn up from information compiled in reviews and combined into the Inception Report. This plan will be used to lay down the basic elements of the management program and the activities needed to finalise and implement it.

**Output 1.4**

Finalisation of the long-term Lake Tanganyika Strategic Plan will take place when all the requisite information has been collected. Finalisation will therefore take place after Year 2 when sufficient data should have become available from the special studies (see Output 5).

**Output 2.1**

Analysis of existing laws and recommendations for new legislation placed in an international legislative framework.

**Output 3.1**

Increased environmental awareness and sensitivity among lakeside communities concerning the fragility of Lake Tanganyika, the international nature of its problems and the interdependence of people with the lake.

**Output 3.2**

A cadre of trained environmental scientists and technicians to provide a core of expertise for managing the biodiversity of the lake and protecting its watershed in the future will be produced.

**Output 4.1**

Mechanisms for regional co-ordination will be introduced and developed.

**Output 5.1**

Determination of the biological consequences of sediment discharge into Lake Tanganyika caused by watershed deforestation and erosion.

**Output 5.2**

Determination and the prediction of consequences of chemical pollution discharged from land or boats.

**Output 5.3**

Determination of patterns and structure of biodiversity in Lake Tanganyika with emphasis on proposed national parks and other conservation areas.

**Output 5.4**

The damaging effects of exploitation on the fish of Lake Tanganyika will be investigated and recommendations made for their mitigation.

**Output 5.5**

Developments in other sectors within the lake basin intimately affects what happens to the lake itself. A detailed examination of present and future plans in these other sectors needs to be carried out so that they can be taken into account in the Lake Tanganyika Strategic Plan.

**Output 5.6**

The prospects for the future of the lake management may depend upon additional benefits generated. The nature and direction of those benefits will be investigated and recommendations made for their distribution.

**Output 6.1**

Creation of long-term research and monitoring programmes.

**Output 6.2**

Management plans will be drawn up for the development of four underwater reserves in Lake Tanganyika for the protection of biodiversity, the conservation of commercial fish nursery grounds and the enhancement of tourism.

**Output 6.3**

Establish and manage new underwater reserves with trained management.

**Output 6.4**

Mechanisms for ensuring the involvement and co-operation of local people.



### III. Present status of outputs

**Output 1.1** Review all existing relevant data on Lake Tanganyika and its basin to provide a platform for initial formulation of the Strategic Plan for the management of Lake Tanganyika.

<b>Scheduled completion date</b>	<b><u>Actual/expected completion dates</u></b>
October 1995	February 1996

**Describe the present status of the output:**

Soon after initiation of the project a series of Baseline Review studies were commissioned, the purpose of which were:

- to review the biological, hydrological and water quality information to establish known patterns of biodiversity in the lake and to determine the extent of degradation in the lake at present,
- to identify gaps in our understanding of the relevant processes and formulate suggested work programmes,
- to review demographic trends from census data and examine all sectoral plans in agriculture, forestry, industry, urbanisation and fisheries, past and present. Ascertain the current status of each sector, in as much as they impinge on the lake, and the likely extent and timing of future developments,
- and to review all legislative aspects including present environmental policies in the four host countries, and any existing or prospective regulations on pollution control and allowable limits. This review will contribute to the eventual drawing up of the legislative framework needed in all four countries to underpin the proper implementation of the programme and its conservation areas.

The exercise comprised a series of studies of secondary information sources and was carried out by specialists in the respective fields drawn from the Consortium. The studies were able to draw largely on published literature and, in some cases, were augmented by visits to the region. This formed a much-needed documentary basis for subsequent detailed discussion and planning at the Inception Workshop. Where information was scant, this was also highlighted in the Reviews as representing potentially large gaps in our current knowledge base. In some cases, information was difficult to obtain for reasons of limited access to certain parts of the region.

Furthermore, taking account of views expressed at the Inception Workshop, the baseline reviews represent the first tier of information in the process of compiling a lake-wide information source or “database”.

The following Baseline Reviews have been produced:

- Biodiversity
- Pollution and its effects on biodiversity
- Sediment discharge and its consequences

- Social, economic and sectoral features
- Legal and Institutional

These were distributed to the key institutions in the region through the Project Co-ordination Unit and the National Co-ordinators as primary resource documents for the Inception Workshop.

In order to expedite the production and dissemination of the Reviews clearance was obtained through the National Co-ordinators to produce the initial versions of the Reviews in English with summaries in French.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

The reviews fulfil project requirements and will be an important resource that can be developed further during the project.

Owing to the longer term value of the literature review sections of the three technically-oriented baseline reviews - 'Biodiversity', 'Pollution and its Effects on Biodiversity' and 'Sediment Discharge and its Consequences'. It was decided to compile and publish these as a single volume in French and English. This volume will form an excellent recent literature review of the current state of Lake Tanganyika that can be given a wider distribution than the five volumes of the original base-line reviews.

The legal baseline review has also been updated and translated in its entirety principally as one of the resource documents for planned workshops to develop the legal and institutional aspects of the project.

**Output 1.2** Inception Report based on all review data will provide bench-line data for the planning of the management program.

<b>Scheduled completion date</b>	<b><u>Actual/expected completion dates</u></b>
December 1995	July 1996

**Describe the present status of the output:**

The Inception Report was adopted at the project Steering Committee meeting on 20 September 1996, subject to amendments agreed upon during the meeting and published in the minutes of that meeting.

The Inception Report serves primarily to present the findings of two key activities of the first Phase of the project: the “Inception Workshop” held in Dar es Salaam in late February 1996 and the “Baseline Reviews” of secondary literature information sources, Output 1.1. Importantly, however, it also takes account of the extensive discussions and liaison held since the project began between the project staff and representatives of government/non-government institutions, other “stakeholder” groups in the region, and UNDP/UNOPS.

It was, however, recognised that changes in circumstances between project preparation (leading to the Project Document) and implementation are inevitable. The Inception Report provided, therefore, an important means of taking stock of these changes through reviewing the prevailing requirements for achieving project objectives in comparison with the activities originally proposed. Most significantly, it provides indicative work plans for the Special Studies which have been prepared in full consultation with institutional and other main stakeholders, making proposals on how these are to be implemented in a way which will ensure a maximum of local participation and development of the regional “ownership” of the project; and proposals for a management structure which have been prepared in consultation with the national authorities concerned. The work plans have subsequently been developed in further detail.

The Report has been an important guide to developing an effective approach to the second phase of the project.

**Inception Workshop**

The Inception Workshop was a important precursor to the production of the Inception Report. The workshop was held in Dar-es-Salaam on 25-28 March 1996 and marked a watershed toward the development of local ownership for the project through the active participation of many relevant national institutions.

The workshop was attended by some 50 delegates comprising scientists and administrators from the region, representatives of the contractors, UNDP, GEF, UNOPS, the PCU and NGOs.

The principal objectives of the workshop were:

- to ensure that the background, purpose and current status of the project were well understood by all;
- to ensure account was taken of the expectations of the four countries (principal beneficiaries), the UNDP/GEF (funding agency) and NRI (project facilitators) regarding the overall objectives the project must achieve;
- to identify the strategy and institutional mechanisms for co-ordination of project activities, principally the subsequent Special Studies; and
- to formulate a preliminary project management framework encompassing the corresponding stakeholder involvement (agencies, ministries, partners) necessary to translate the research findings into realistic management activities during the final implementation phase of the project.

The workshop largely succeeded in meeting its objectives and provided the necessary input for the Inception Report.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

The Inception Report meets the criteria laid out for it and, having been thoroughly reviewed, discussed and adopted by the project Steering Committee provides the working framework for the project. A revised version of the Inception report has been produced incorporating the recommendations of the Steering Committee for wider dissemination.

**Output 1.3** A Preliminary Lake Basin Strategic Plan (PSP), will be drawn up from information compiled in reviews and combined into the Inception Report. This plan will be used to lay down the basic elements of the management program and the activities needed to finalise and implement it.

<b>Scheduled completion date</b>	<b>Actual/expected completion dates</b>
February 1996	December 1996

**Describe the present status of the output:**

The GEF Operational Strategy<sup>1</sup> for international waters projects envisages participating countries adopting “Strategic Action Programmes” to improve the definition of transboundary concerns in aquatic systems and to establish a clear set of priorities for endorsement at the highest levels of government. Given recent experience in other international waters projects (e.g. Black Sea and Gulf of Guinea) it has been considered appropriate for the Project to adopt an analogous strategic approach. Issues related to the overall development of a Lake Tanganyika Strategic Action Plan (LaTSAP) are, therefore, discussed in detail under Output 1.4.

The first stages of this LaTSAP process, however, have been completed by the Project through the production of a Consultation Document for the “Preliminary Strategic Action Plan”. This document was produced initially by the Project’s international experts and was circulated in May 1997 for regional consideration and debate. This drew on an initial prioritisation of threats completed by the regional delegates at the Inception Workshop which, in turn, was largely informed by the earlier Baseline Review process.

Building on from the list of prioritised threats, the Consultation Document breaks each of the main categories down into specific components. Potential associated management responses are proposed as mitigation to threats and the future role of the several Project components is considered (Special Studies, Legal studies, Training and EE).

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

In the following section (Output 1.4) it is shown how the Consultation Document represents an important first stage towards a more comprehensive review and analysis of threats on a national level and how it will inform a “Regional Transboundary Diagnostic Study”, planned for the new year. A time scale for this process is provided under Output 1.4.

Owing to the overriding importance of the Strategic Action Plan it was not included as part of the Inception Report as indicated in the wording of this output.

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<sup>1</sup> “Revised Draft Operational Strategy” Document GEF/C.6/3, GEF, 1995)

**Output 1.4** Finalisation of the long-term Lake Tanganyika Strategic Plan will take place when all the requisite information has been collected

<b>Scheduled completion date</b>	<b>Actual/expected completion dates</b>
August 1999	Ongoing

**Describe the present status of the output:**

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## 1. Introduction

Under this Output, we wish to outline not only project achievements to date in developing a strategy for sustainable management of Lake Tanganyika, but also our considerations on where effort should be concentrated over the remaining project period. In particular, we wish to address a series of essential activities over the forthcoming year which are designed to move the project rapidly towards the establishment of an effective **Lake Tanganyika Strategic Action Plan - LaTSAP**. Coupled with this are proposals for an **Urgent Investment Programme** aimed at mitigating pressing environmental threats (“*hot spots*”) within as short a time frame as possible.

Of prime concern throughout the strategy will be:

- increasing focus on building capacity in national stakeholder institutions<sup>2</sup> through facilitating their direct inputs to the development of the strategic planning process and through meeting the requirements of the training strategy (see Output 3.2);
- strengthening regional institutional collaboration (especially between francophone/anglophone states);
- securing a regional SAP signed by all 4 countries by early 1999: this will represent a framework agreement on a range of environmental principles from which national policy and action will emerge.
- emphasis on information generation through the Special Studies which is aimed at ongoing development of both environmental monitoring and management tools.

It is noted that this discussion on Project strategy presented in this section is not only relevant to **Output 1.4**, but also to **Immediate Objective 6** (“The implementation and sustainability of the Lake Tanganyika Strategic Plan and incorporated environmental management proposals”) in section IV of this report and should, therefore, be read in the context of both of these headings.

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<sup>2</sup> Stakeholder institutions in this context include key non-governmental as well as governmental agencies with an interest in the lake: capacity building and involvement in the planning process will accommodate both sectors.

## 2. The Planning Process

LTBP aims to develop an effective regional approach to managing environmental threats to the lake, particularly those represented by sedimentation and pollution. In order to achieve this, the Project objectives stipulate the following:

- the preparation of a **Strategic Plan** to manage and conserve the lake resources; and
- the creation of a **Management Body** with capacity to develop and co-ordinate the Strategic Plan and to bring about the subsequent implementation of regional and national management interventions.

The Project has accommodated both these objectives into the single concept of the **Lake Tanganyika Strategic Action Plan - LaTSAP** - which we can thus define as the process of:

- achieving agreement on the scope of **national management responsibilities** in support of a **collaborative regional programme** which addresses priority environmental concerns<sup>3</sup>; and
- negotiation and agreement to the components of regional and national plans and the subsequent coordination of **management interventions**.

### 2.1 Strategic Action Plan

The GEF has adopted the SAP concept to cover the full development process, linking the preparation of the SAP with the development of those institutions responsible for co-ordinating its subsequent implementation. This is most clearly defined for *International Waters*<sup>4</sup> projects, where the fundamental requirement is to achieve effective regional coordination of national interventions under a framework of agreed and defined regional/international principles and objectives. The SAP provides such a framework within which interventions will be managed by **national institutions** and which offers a channel for participating countries to demonstrate their commitment to agreed **national, regional and global** responsibilities.

The Project recognises that the development of an effective SAP cannot be considered as a one-off planning process. Indeed, there can be no “final” plan<sup>5</sup>, rather one which continuously evolves responding to improved information, to changing demands on the environment and to the effectiveness of management interventions. The Plan is expected to improve over time as a function of improving national institutional capacity.

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<sup>3</sup> From the viewpoint of International Waters Programmes (*see next footnote*) such as LTBP, regional environmental concerns can be defined as “transboundary”; if the environmental concern is purely of national significance then it is a national problem. However, given the inter-relationships within the lake basin ecosystem, virtually all biodiversity issues must be considered as having transboundary significance.

<sup>4</sup> The GEF have defined a number of Operational Programmes, broadly defined within the three main focal areas of Biodiversity, Climate Change and International Waters. The Lake Tanganyika Project must be considered as a multi-focal area project, containing elements of the Operational Programmes for Biodiversity and International Waters.

<sup>5</sup> Note that Output 1.4 refers to the “finalisation of the long-term Lake Tanganyika Strategic Plan” and Immediate Objective 6 as the subsequent “implementation of this ...Plan”.

This *process* of defining and refining the SAP is seen as being critical to the progression towards the regional collaboration needed to achieve effective management of the joint resources of the lake basin.

## **2.2 The Management Body**

Responsibility for managing the SAP process will be vested in a permanent regional organisation (*the Management Body*<sup>6</sup>) which will co-ordinate national development interventions and oversee the future development of the lake basin. The Project recognises that the underlying principle to a successful outcome of the SAP (i.e. the final implementation of co-ordinated regional and national management interventions based on agreed regional priorities), will be the effectiveness of this Management Body. To a large extent the mechanism for demonstrating the capacity of the Management Body to implement the plan, is the ability of the management body to develop the plan. At the same time the process of developing the plan provides the opportunity for **institutional capacity building** in support of that management body.

Section 2.5 (below) discusses the role of the current Regional Steering Committee in this context and the means by which we envisage this evolving into the Management Body required.

## **2.3 Development of Lake Tanganyika SAP (LaTSAP)**

In order to address the Project's requirement for a fully functioning SAP, we now propose a series of time-bound interventions intended to reinforce progress achieved so far. Figure 1 provides a summary of the main activities envisaged and how these build directly upon our ongoing programme. Figure 1 also indicates the process by which the LaTSAP will be established and how its long-term sustainability is, as far as possible, assured.

We propose a time-frame for these interventions in section 2.3.6.

In the development of these proposals, we have drawn from other similar GEF initiatives, in particular, the Black Sea SAP. This has followed a very similar approach to the Project but is more advanced and thus, in spite of the many contextual differences which exist, several valuable lessons can be learned from that project, especially with regard to furthering the ongoing development of LaTSAP.

### **2.3.1 Defining Regional/National "Ownership"**

Project experience to date has demonstrated the considerable difficulties inherent in establishing the kind of spontaneous, concerted, regional response to project objectives in the manner envisaged by the Project Document (ref. PD Section B.7 and Output 4.1 *et seq.*). Other than the obvious regional socio-political disturbances which have had major impact on our activities, this is likely to be due to several interlinked factors:

- Little previous experience of international collaboration between the riparian countries particularly in the field of natural resources / environmental management

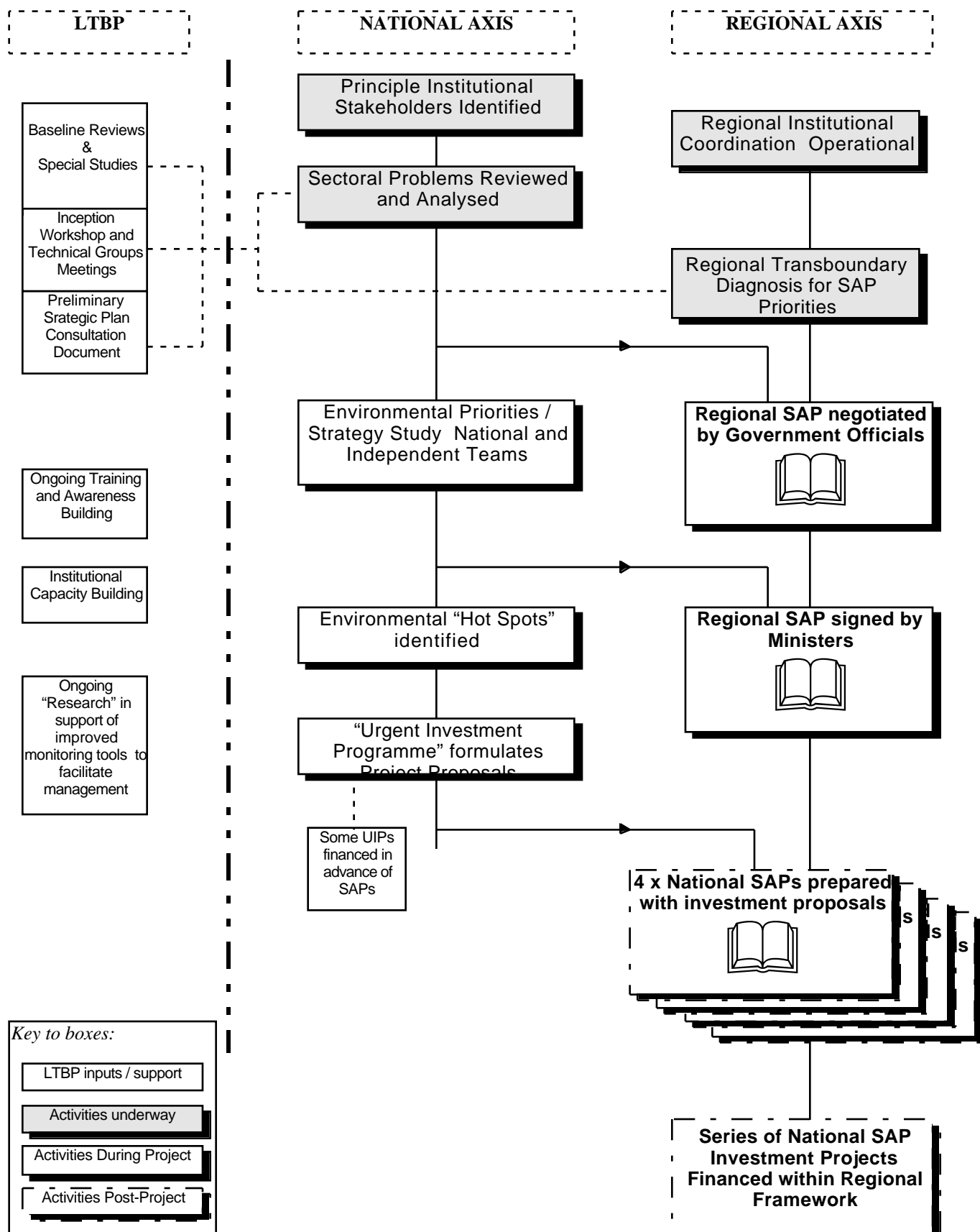
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<sup>6</sup> Referred to in the Inception Report as the Lake Basin Management Committee



- Dearth of relevant information on the state of the environment and of the main pollution threats. Recent progress with the Special Studies (SS), however, is beginning to address this constraint;

**Figure 1: Development of the Lake Tanganyika SAP**



- Lack of capacity / awareness of the concerned staff and of participating institutions of the “environmental issues” pertaining to Lake Tanganyika and management mechanisms available<sup>7</sup>;
- Lack of political and legal authority vested in the Steering Committee (see below).

As an important first step in the SAP process, therefore, it has been (and will continue to be) necessary to consolidate current initiatives aimed at developing and refining **national ownership** and through this initiative, encourage the emergence of a regional axis. This focuses on two principle areas (see Figure 1):

- **identifying key stakeholder groups** (governmental institutions and NGOs) at the national level (including provision of a comprehensive institutional analysis - See Output 5.6.
- **fostering regional co-operation** through reinforcing collaboration of technical and other regional working groups comprising staff from key national institutions. This will be reinforced particularly through active collaboration in the development of the LaTSAP.

### 2.3.2 National Environmental Priorities

An important preliminary activity will be the implementation by the four National Working Groups of reviews of **national sectoral problems**. These will draw heavily upon the Consultation Document for the “Preliminary Strategic Plan”. Subsequently in support of the transboundary diagnostic analysis (see below), we propose to implement **National Environmental Priorities / Strategy Studies** for each of the 4 countries. The Studies would be implemented by national institutional personnel (drawing from a range of stakeholders) in close collaboration with LTBP personnel / international experts. The Studies will pinpoint national priorities and recommend national strategies to address these. The virtue of starting on a country by country basis with National Environmental Priorities/Strategy Study, is that these become useful capacity building exercises for the respective government officials and strengthens their ability to participate in the regional exercise.

### 2.3.3 Transboundary Diagnostic Analysis

The Project has already produced a “Consultation Document for the Preliminary Strategic Action Plan”. This was based upon the findings of Baseline Reviews, the Inception Workshop and initial findings of the Special Studies. The concepts outlined under this Consultation Document now require further discussion at the national level by national institutions. National views on sectoral threats and problems will be assessed, and then prioritised on a regional basis. A Transboundary Diagnostic Analysis (TDA) will be produced by a group of regional and international specialists. Under the guidance of the Project, the TDA will prioritise actions to address problems and suggest options.

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<sup>7</sup> Our experience here has shown that this is particularly problematic when a multi-sectoral and multi-disciplinary view is required.

### 2.3.4 Regional SAP

Senior government (and other institutional) representatives from the region who have already played a role in the above, would negotiate and agree the **Regional SAP**. The Regional SAP defines aims, issues, principles and actions which will guide the development of National SAPs in addressing the priority issues - i.e. **it will outline principles against which future actions will be taken at a national level by national institutions**.

The Regional SAP will draw largely from the TDA and will agree modes of operation in **advance of formal protocols**, based on the understanding that this may be valid for a limited specified time-frame.

### 2.3.5 Hot Spot Mitigation

It is expected that a number of environmental “**hot spots**” will be identified as part of the prioritisation exercise (these may, for example, include Tanesco oil treatment in Kigoma and the proposed oil depot in Bujumbura. The former releases significant amounts of untreated oil residues into the lake). These would lead into the next phase of the analysis, the formulation of “**Urgent Investment Programmes**”. This exercise will involve financial and economic planners and will lead to the preparation of a preliminary set of costed investment programmes, some of which could be offered to interested donors in advance of the fully formulated LaTSAP. Experience during the first 2 years of Project activities has demonstrated several opportunities for parallel donor inputs into activities complementary to the aims of LTBP. These include interest from EC in aspects of watershed management; a DFID/CARE refugee impact assessment in Kigoma, Tanzania; and support from International Decade of East African Lakes - IDEAL - in providing limnological training inputs to African scientists.

### 2.3.6 Timescale

Our proposed timescale for achieving the above is indicated in the table below. It is emphasised that inputs from the Special Studies and other ongoing Project activities (e.g. Legal Studies) will continue to inform and support the development of this process.

#### **Mar 1998:**

Convene National Working Groups and agree Terms of Reference and Work Plans for *National Sectoral Problem Reviews*. Needs for additional staff identified.

- Two days per country

#### **Apr/May 1998:**

*National Sectoral Problem Review* implemented by National Working Groups in collaboration with Project team.

- Five days per country

#### **Jun-Aug 1998:**

Expanded National Working Groups prepare *National Environmental Priorities / Strategy Studies* highlighting “*Hot spots*” and identifying need for specific *Investment Proposals*

- Up to five days per country

**Sept 1998:**

Convene the first Regional Meeting of Technical Advisory Committee (members of National Working Groups plus international Project staff): carry out *Transboundary Diagnostic Analysis* - technical prioritisation of environmental threats based on pressure-state-response concept, giving key areas for intervention and/or further study.

- Up to five days

**Oct/Nov 1998:**

*Investment Proposals* for national “Hot Spots” prepared by expanded national working groups and international Project team (including economic project planning experts).

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**Dec/Jan 1998:**

Regional Technical Advisory Committee plus additional representation from Ministries/Treasury etc. to discuss and negotiate Preliminary *Regional SAP* proposals. Preliminary document prepared and distributed.

- Up to five days

**Feb 1999:**

As an extension of the Steering Committee Meeting , *Regional SAP* further negotiated (if necessary), agreed and signed by representative Ministers or their representatives.

- Up to three days.

## **2.4 Towards Sustainable Management**

GEF Operational Strategy highlights a number of key principles that apply to all GEF supported programmes. The Strategy recognises the need to maximise the returns to interventions. This concept of efficiency extends from :

- implementing cost effective activities;
- ensuring that interventions are “complementary and incremental” to existing projects; and
- encouraging other agencies to support GEF objectives through parallel financing activities.

Although the development of cost effective investment proposals and their subsequent funding within the SAP framework is likely to extend well beyond the end of the current Project (possibly with the exception of some “hot spot” mitigation activities), through the LaTSAP the Project will nevertheless play a major role in identifying priority areas.

The Project recognises the vital role that financial support through international donors will ultimately play in achieving the goal of sustainability, especially given the current political and economic instability in the region. We expect that several donor organisations will be keen to “buy into” a successful LaTSAP framework as soon as this

is “up and running”. Engendering donor support at this stage is, therefore, regarded as paramount to the LaTSAP development process. Moreover, the Project will need to play a major facilitating role in building up the capacity of riparian institutions to develop project “bankable” proposals and in presenting these to potential donors.

### **2.5 Steering Committee to Management Body**

The Project Document emphasises the need to establish an effective Management Body (a “Lake Basin Management Committee”) as well as a sound management plan. The Document states *“It is particularly important that a broadly based and co-operative lake management mechanism be put into place which can continue to influence and extend the Strategic Plan beyond the lifetime of the present project”*, and *“...this organisation should be ready to take over and be operational by the end of the present project”*.

During the lifetime of the Project, the Steering Committee will, with support of the Technical Advisory Committee and the Project, be fulfilling a role very similar to that of this *management mechanism* as envisaged in the Project Document. Indeed, the First SC Meeting in 1996 endorsed the proposal that it would develop into a body with this wider management mandate.

As discussed above, for it to be effective in co-ordinating the future regional and national management and planning interventions, we intend to ensure that the Steering Committee becomes further involved in the preliminary LaTSAP planning processes. In support of this objective we propose the following actions:

- As a first stage, the Steering Committee must redefine its Terms of Reference to include the required inputs to the development of the LaTSAP and its subsequent evolution into the Lake Tanganyika Basin Management Committee;
- In support of this, the Steering Committee must assess the validity of the present membership, and propose any changes that may be necessary at this stage, and at the same time allowing for future changes in membership as the committee decision making requirements change<sup>8</sup>.
- Finally, the Steering Committee and the Project Coordination Unit should establish specific capacity and institution building requirements that will be required to promote these changes.

In addition, the establishment of a predetermined series of Steering Committee Meetings will help consolidate the role of this group and provide a firmer footing for building capacity of the group members through linking specific meetings to specific tasks and associating them with planning workshops and capacity building exercises.

### **2.6 Role of the Special Studies: Monitoring and Management**

The basic output of the LaTSAP will be a set of prioritised management interventions to improve the sustainable use and conservation of the lake resources. The purpose of monitoring is to support management.

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<sup>8</sup> One specific issue would be the present and future role of the UNDP country representatives who, in the present structure, have been given voting rights.

The GEF guidelines use the *pressure–state–response* monitoring framework. *Pressure* can be taken as being the result of human activities that are degrading the system; *state* describes the health of the environment, and can be used to define the desired quality objective for the project; and *response* can be taken as the steps taken by management to address the pressure to achieve the desired state of the environment. If management *responses* are successful, then the *state* of those resources should show no further indications of degradation, and the scale of the *pressures* should be reduced.

A specific output of the Project special studies groups is the development of a baseline and framework for a long–term monitoring programme, which should cover all three aspects above. In addition the special studies groups have the responsibility for the dissemination of the information to a wider audience, fulfilling the GEF “demonstration” objective and providing information on which to base other biodiversity/international waters projects.

**Output 2.1 Analysis of existing laws and recommendations for new legislation placed in an international legislative framework.**

<b>Scheduled completion date</b>	<b>Actual/<u>expected</u> completion dates</b>
December 1997	December 1998

**Describe the present status of the output:**

The collection and analysis of existing laws is complete (subject to ongoing legislative changes).

The Baseline Review completed in February 1996 reviewed relevant laws on all sectors involved in resource use within the lake basin for all four countries, as well as relevant international agreements which some or all of the parties are signatories to. Information on legislative and institutional developments since the preparation of the Baseline Review was collected during a visit by both legal consultant (Messrs Cullinan and Hodgson) to Zambia, Tanzania and the DRC in July/August 1997 and during a visit by Mr. Hodgson to Burundi in October 1997. During the visits it became apparent that there was very little knowledge among government lawyers in each of the countries concerning the laws of the other countries. This is being rectified by translating and distributing the Legal Baseline Report to a wider audience and by requesting the delegations from each country to make a presentation on their laws and institutions at the forthcoming legal workshop in February 1997.

The studies undertaken to date indicate that it is more important for the Project to concentrate on assisting the countries to reach regional agreement on the regulatory priorities for the Lake and to establish a mechanism for reviewing the adequacy of national legal frameworks on an ongoing basis, than it is to attempt to harmonise national laws at this stage.

Although the original project document identified the need to harmonise the laws of the riparian countries it is now apparent that in almost all areas it is unnecessary for the laws in each country to be identical or very similar in order to meet the Project's objectives. In respect of some areas, further information is required (e.g. regarding the extent to which particular fish stocks are shared) before it can be concluded that harmonisation is necessary. This has been discussed with government lawyers and administrators in each of the countries who agree that the key objective at this stage is to establish a mechanism for long-term co-operation to ensure continuing regional discussion about national laws so that the outcome of the laws, rather than the legal mechanisms themselves, are similar.

The strategy for ensuring that the future national laws support the long term objectives for the co-operative management of the Lake is to include in a Regional Agreement for the management of the Lake (see Objective 2 below) obligations on national governments to enact appropriate national legislation (e.g on environmental impact assessment) and to put in place institution arrangement which will facilitate ongoing exchanges of information between



the countries and reviews of the regional and national regulatory frameworks which affect the management of the Lake and its basin.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

Although the Legal Workshop has not yet occurred most of the work required to achieve this objective has been completed and there is a clear strategy for completing the outstanding elements which we will begin to execute at a Legal Workshop in early 1998. The strategy being followed is first to achieve broad consensus at the technical level (i.e. among government lawyers and key policy makers in the four countries) on the content of the Agreement before involving government lawyers from each country in preparing a draft Agreement drawing on examples of similar or analogous treaties elsewhere in the world. It is envisaged that a succession of small, regional or national drafting workshops may be needed to refine the draft Agreement and this process will continue until there is an agreed text in English and French which is acceptable in principle to the stakeholder Ministries in each country. This text would then be presented to the four governments for negotiation at the diplomatic level.

Comparative research on analogous treaties and institutional structures throughout the world has already been completed and working papers prepared.

The main objectives of the legal workshop are as follows:

- to bring together, and open channels of communication between lawyers and senior policy makers from each of the countries who will be involved in the negotiation and implementation of the Agreement;
- to reach general agreement on the content of the Agreement, and in particular, the institutional structure for the long-term joint management of the Lake;
- to agree on a strategy and plan of action for drafting, negotiating and finalising the Agreement within the project time frames;
- to initiate a discussion on how to manage the transition from existing project structures to a sustainable institutional structure for the long-term joint management of the Lake under the Agreement;
- to provide training on aspects of international environmental law (a need identified at the Inception Workshop), the law of international watercourses, and conflict resolution mechanisms; and
- to facilitate an exchange of information between the participants on the relevant laws, policies and institutions of each of the four states to promote a greater understanding of

the existing regulatory framework affecting the Lake and to generate ideas as to how it could be improved at a national level.

**Output 3.1** Increased environmental awareness and sensitivity among lakeside communities concerning the fragility of Lake Tanganyika, the international nature of its problems and the interdependence of people with the lake.

<b>Scheduled completion date</b>	<b>Actual/<u>expected</u> completion dates</b>
December 1998	December 1998

**Describe the present status of the output:**

In both Tanzania and Zambia, the major national EE institutions (NEMC and ECZ/ZEEP) are involved in the project and have seconded national EE officers who have benefited from specialist short-course training and technical backstopping from ICCE, NRI's subcontractor for EE.

The project is beginning to generate improved environmental awareness in some locations and amongst lakeshore stakeholder institutions in both countries as a result of local PRA fieldwork, provincial level stakeholder meetings, and programmes of EE activities. These are most advanced in Zambia (familiarisation tours of community based fisheries and wetland management, village drama group, and a programme for the to develop local "strata management committees" for lake fisheries. In Tanzania the unreliability of the NEMC seconded EE officer resulted in slow progress, but a replacement has now been appointed and has received training at ICCE in UK.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

- Progress made will take time and concerted action to yield widespread increased environmental awareness and sensitivity ; the expected completion date of December 1998 is unrealistic except for Zambia, although the whole exercise of awareness raising is of course an ongoing process which will have to continue well beyond the timetable for the project.
- Participatory fieldwork in Tanzanian and Zambian lakeshore villages indicates clearly that there is already a limited degree of environmental awareness amongst lakeside communities. However, although EE has a part to play, awareness alone is not enough for improvements in resource management, which requires the introduction of real alternatives and incentives for change at local level. These in turn require strong institutional mechanisms for development assistance and for the enforcement of agreed environmental controls, involving national and local government and externally funded development projects. The project will work to establish such mechanisms.

**Output 3.2** A cadre of trained environmental scientists and technicians to provide a core of expertise for managing the biodiversity of the lake and protecting its watershed in the future will be produced.

**Scheduled completion date**

January 2000

**Actual/expected completion date**

January 2000

**Describe the present status of the output:**

A clear analytical approach to training requirements is advocated to avoid the project being drawn *ad hoc* into satisfying the multitude of disciplines upon which it touches, rather than those key to the overall project purpose.

Partial reviews of the needs of the riparian countries, with emphasis on the needs of the Special Studies have been carried out through consultancies which commissioned British Council staff in Dar es Salaam and Prof Jaques Moreau of ENSAT (France) to provide most of the necessary inputs. It was not possible to visit Burundi during these consultancies, so further input is still needed from there and also the provincial universities in DRC.

The above consultancies have identified areas of need in several different forms and at several different levels - for both personal and institutional support in training and capacity building in both English and French. Following these consultancies a broad training strategy has been drawn up for further development. This has not, however, prevented the short term training courses for the special studies during 1997 from taking place as planned. These are outlined in Table 1.

Table 1.

Special Studies Group	Activity/Course Title & Date	Location	Trainees & Personnel
General	Training Needs Appraisal	Regional; mainly Tanzania	Ms S Garnett British Council TZ
	Training Needs Appraisal consultancy. Jan 97	Mainly Kinshasa, D.R. Congo	Prof Moreau & Dr K Banister
Biodiversity	Dive training & underwater survey	Kigoma/Mpulungu	3 Trainers: Trainees: Tanz. 3; Zam 4; DRC 4; Bur 4
Fishing Practices	On the job training survey and social aspects	Kigoma/ Mpulungu	Tanz, 6; Zam, 5
Pollution/Sedimentation	Methods training workshop. Oct 97  MSc in sedimentation	Kigoma  Kigoma/Univ. of Dar es Salaam	5 Trainers Trainees:- Tanz, 20; Zam, 11 Mr Rubabwa, supervised by Ngotagu and Patterson
Socio-economics	Workshops for PRA techniques and actual PRA work training/studies	Kigoma/Rukwa/Mulungu	Numerous participants from national and regional institutions
Environmental education	ICCE training courses On the job training	UK  Kigoma region Mpulungu region	Tanz, 2 Zam, 1 Tanz 1 (plus various local participants) Zam 1 (plus various local participants)

## **DRAFT TRAINING STRATEGY : PRINCIPLES**

The following strategy outline applies to all aspects of training within the project except for the Environmental Education (EE) component, which is being considered within the Socio-Economics and Environmental Education Special Studies element of the project.

### **Training of Personnel**

#### **A) Courses Leading to Higher Qualifications**

**PhD.** The scope for PhD level studies is limited by the project purpose and time frame. It is recommended that if PhDs are agreed the research for these takes place around the lake rather than overseas and the studies should preferably be completed within the life-span of the project.

**MSc.** High calibre staff should not be away from the project for more than a few months at a time for study purposes. Thus overseas taught MScs are not recommended. MScs by taught courses where available within Africa, preferably within the four countries, may be supported if they are particularly appropriate.

The preferred medium for project-associated staff obtaining a higher degree would be for them to do it by full time research attached to the project with joint supervision by a staff member of the local University and a special study coordinator from the implementing subcontractors.

**Undergraduate Degrees.** The project will not become involved in undergraduate teaching. However, support for relevant undergraduate courses will be provided by encouraging students to participate on project surveys. Thus links developed between their institutions and LTBP will be supported and strengthened.

#### **B) Short courses for Project Staff**

Short courses (weeks in length rather than months) for project staff will form the major component of technical training. The majority of these will take place on the lakeshore, based at the four project sites. It is expected that several more courses will be proposed as needs are identified. Courses in protected area management would be included within this group.

#### **Data Analysis/Study Fellowships**

Project staff who have been active in collecting material or data should be given the opportunity, where appropriate, to assist in any analysis of the material which, for technical reasons, has to take place overseas. Up to 3 months in an outside institution as part of a Special Study leader's team, should be sufficient for this but longer term placements could also be considered.

#### **Conferences and Workshops**

Funds are available for attendance of project staff at Africa-based conferences and workshops which are relevant to their training and career development. Requests for project funded attendance outside Africa may also be supported.

### **‘State of the Lake’ Conference**

This is planned to be an event of considerable international significance, at which project staff will present to their governments, pan-African representatives and the world scientific community, the most significant results of the LTBP. It will therefore be an important training experience for all the riparian country project staff.

### **Institutional Development**

Attempts have been made to identify a single university or institution in each country which will take the lead on developing project related, perhaps modular, MSc courses. These courses should include both technical and sociological elements, so that participants have a rounded understanding of the issues involved in lake basin management.

The development of these courses will be assisted by the project, probably with personnel and information services. It is hoped, but cannot be guaranteed at this stage, that some of the in-region courses assisted by the LTBP will be taking students before the end of the project. A technical curriculum development consultancy to work with project and university staff to assist the MSc course development process is anticipated.

Links with African universities which already run appropriate courses outside the riparian countries (e.g. University of Nairobi, University of Grahamstown) will not be ignored, though more information on what they can offer is still being sought.

### **Books and Materials**

In addition to course development work, there will be funds available for addressing some of the literature needs of the selected universities.

### **Other Training Linkages**

The project is also developing linkages with other international groups which are active in similar scientific or educational work within Africa including the GEF/World Bank Lake Nyasa project. The first of the planned IDEAL (International Decade of East African Lakes) training courses will take place in August and September 1998, and will involve American and African staff and students working jointly on limnological topics. A further linkage which is being developed is the IW:LEARN proposal - a plan to link many of the GEF aquatic environmental projects around the world in a distance learning experience-sharing computer-based network. It may be possible to use this proposal to provide training, at up to MSc level, in computer skills of relevance to LTBP.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

Although this output is judged to be proceeding satisfactorily, the output itself, as defined above in Output 3.2, has been identified as too limited for the long term sustainability of this project. The emphasis above has been placed too rigidly on scientific skills.

While it is necessary to develop those capabilities linked to the Special Study groups, the broader need for institutional and managerial training support has to date been neglected. It is intended to supplement current plans for scientific and technical support with training activities at institutional level for non- Special Studies staff. These plans would be relevant to top management and planners from government and technical institutes within the riparian countries. It is expected that the training will take the form of short intensive workshops or courses, closely related to the development of LaTSAP. The workshops will assist these senior personnel in gaining a greater understanding of holistic cross-cutting issues involved in lake basin management, and the roles of their respective units in advancing the sustainability and protection of biodiversity within the entire lake basin. This work will be initiated through a detailed appraisal of institutional needs within the region.

**Output 4.1** Mechanisms for regional co-ordination will be introduced and developed.

**Scheduled completion date**                      **Actual/expected completion dates**

August 1999

August 1999

**Describe the present status of the output:**

The first stage in what is essentially an institution building and development process has been through the creation of the management and co-ordination structure for the project itself given in Figure 4 of the Inception Report. The principal elements at this stage in the process are the Regional Steering Committee and the National Working Group in each of the riparian states. It is generally accepted that effective regional coordination will not be achieved until the issue of Lake Tanganyika management and conservation is firmly on the national agenda of the riparian states and the responsible institutions therein.

It was agreed at the last meeting of the Steering Committee (SC) that co-ordination and communication within each country will be done primarily through the medium of the National Working Groups led by the National Co-ordinators. Their principal role will be to bring together the key institutional stakeholders at senior level, and other interested parties who might not necessarily be directly involved, in order to exchange information and views and ensure a collaborative approach.

*National Working Groups (NWG)*

It was decided that the working groups should have a core membership of approximately 10 representatives to be determined by the individual countries and that additional members could be co-opted on an *ad-hoc* basis as required. To ensure effective co-ordination the groups should meet 4 times per year. It was stressed that the role of the National Co-ordinators was vital in ensuring the effective functioning of the National Working Groups.

The current core membership of the four National Working Groups is given in the following table:

(Table)

CONGO	BURUNDI	TANZANIA	ZAMBIA
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For the first six months after the meeting of the Steering Committee the groups did not meet as frequently as expected owing to the need to develop Letters of Agreement between project and lead agencies for the channelling of resources. Subsequently all working groups have met at least once and it is now expected that meetings will be held regularly. In the case of Zambia the decision has been made, using existing budgetary allocation, for at least some of its members to meet once per month until it is felt that there is sufficient momentum in all project aspects to allow the frequency to drop back to one per quarter.

A constraint to the effective functioning of the NWG identified in the early meetings is the lack of explicit terms of reference. None of the previous project documents actually stipulate clear terms of reference. This lack has led to agenda items being rather ad-hoc and whilst flexibility is desirable clear objectives are required. Consequently in order to clarify and strengthen the role of the National Working Groups more detailed terms of reference have been drawn up based on ones originally put forward by the Zambian National Working Group. These are given below and it is recommended that these or similar be formally adopted by all NWGs.

1. To provide overall coordination and support to the project at the national level
2. to review progress and advise on the various project activities taking place in the country, ensuring timely execution of national programmes and adequate stakeholder participation.
3. to identify institutions and individuals for implementation of specific project activities
4. to make recommendations to the Steering Committee on policy and other matters relating to project implementation.
5. to bring together principal institutional stakeholders at senior level and other interested parties to exchange information and views to ensure a collaborative approach to project implementation
6. to inform the project coordination unit regarding relevant projects in other sectors, ongoing, planned or completed and provide copies of any reports produced for the project database.
7. to provide guidance and support to the national coordinator

Every effort needs to be made to ensure that the most appropriate individuals from the represented institutions attend these meetings and that a sufficiently large core group of the same individuals attend regularly to ensure continuity. National Co-ordinators must drive this process.

The Project Steering Committee is currently the sole regional body that has been formally constituted and will be the principal institutional mechanism for regional co-operation for the duration of the project. It was formalised at its first meeting in September 1997 and comprises:

The Principal Secretary or equivalents from the lead organisations

The National Coordinators

Two other senior officials from key institutions

UNDP programme officers from the four countries

The PCU acts as secretariat and a senior member of the implementing subcontractors management committee attends as resource person.

The terms of reference were agreed to be :

- provide overall direction of the project;
- review the progress of the project and the various national activities, ensuring a regionally integrated approach;
- direct on policy matters, and monitor the utilisation and availability of counterpart staff;
- approve future planning, and make recommendations to the executing agency as to changes in project timetables, inputs and budgets which may be necessary from time to time;
- provide guidance and support to the Technical Advisory Committee and Project Coordinator.

It was proposed that the committee should meet at approximately 6 month intervals. The first took place in September 1996 in Lusaka, Zambia, although unfortunately Burundi was unable to attend. The second was originally scheduled for early 1997 in Arusha, Tanzania. This was postponed and then finally cancelled owing to difficulties of bringing all parties together at the time. The next meeting is scheduled to follow on directly from the TPR in January 1998.

Nevertheless during the interim, the development of the Preliminary Strategic Action Plan, Consultation Document and further investigations into the development of a legal framework for regional collaboration has raised a number of issues related to the role of the SC and how the eventual Lake Tanganyika Biodiversity Management Committee will develop from or through it.

The crucial role of the Steering Committee and its role in the development of the Lake Tanganyika Strategic action plan is discussed in more detail under Output 1.4.

### **The Role of the Technical Advisory Committee**

The first meeting of the Steering Committee proposed that the composition of the Technical Advisory Committee would include four senior environmental scientists, one from each country, senior research officers from the key institutes, the national coordinators, the project coordination unit and the team leaders from the special study groups.

It had been envisaged that one of its first meetings would be to review the workplans put out by the various special study groups. However owing to the large number of individuals that need to be consulted from the various organisations and the difficulties early in 1997 of convening such a regional committee, it has not met. Instead in francophone countries a technical planning workshop was convened to review the workplans consisting of all interested parties. Although a similar exercise was proposed for anglophone countries the need was less pressing because of the much greater contact between the special study coordinators and the responsible individuals in the national institutions which lead to the workplans having the local input through a more informal but no less effective means. Essential therefore to date there has been no real need for this group to meet.

The assumption is that the Steering Committee, evolving into the permanent management body, will remain a senior level planning and policy coordination body, capable of negotiating political commitments within their own countries. During the life of the project the Steering Committee will rely on the Technical Advisory Committee for specialist advice, in particular in collating and comparing the information from the different national sectoral studies, national institutions and national action plans. The proposed LaTSAP (Output 1.4) identifies a clear role for the first meeting of this committee, namely to carry out the - *Transboundary Diagnostic Analysis* - i.e the technical prioritisation of environmental threats based on the pressure-state-response concept, giving key areas for intervention and/or further study.

Given the differing roles of the Steering Committee and the Technical Advisory Committee. it can be expected that, as with the Steering Committee, there will remain a need for a specialist advisory body after the present project time-frame. As such, the revised TORs of the Steering Committee will include defining the future institutional role and support requirements of the Technical Committee.

#### *Regional task forces*

It was envisaged that specific regional task forces would be created to bring together regional experts under the main themes of project activity, to exchange, compile and analyse data, plan future work and receive methodological advice and training. Details of these groupings their composition and function were to be a part of the Preliminary Strategic Plan.

Until further progress is made on the planning and capacity building process at National level formal composition of such task forces is not possible. Nevertheless meetings of

scientists technicians and lawyers have and will continue to take place on a *ad-hoc* basis at workshops, training courses and through the formation of multi-national survey teams required to carry out certain special study investigations.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

Some headway has been made but it is clear that before any effective regional coordination can be established National coordination mechanisms need to be strengthened. This will be done initially through the National Working Groups the role of which will be developed to be more proactive than hitherto especially with regard to the development of the required institutional commitment. The introduction of the proposed strategic planning process described under Outputs 1.3 and 1.4 will enhance this process as will a proposed institutional analysis and assessment to make a broad based assessment of the requirements for institutional support at the national level.

The situation with respect to the Steering Committee is less satisfactory not only because it has missed one of its scheduled meetings but more importantly because its current TOR limits it to purely Project Management Responsibility and does not make explicit its responsibilities toward the development toward the eventual LT BMC, as discussed previously under output 1.4

**Output 5.1** Determination of the biological consequences of sediment discharge into Lake Tanganyika caused by watershed deforestation and erosion.

<b>Scheduled completion date</b>	<b>Actual/expected completion dates</b>
April 1999	October 1999

**Describe the present status of the output:**

*Introduction and general strategy*

Following the compilation of existing information in the Baseline Review 'Sediment Discharge and its Consequences', the Inception Workshop process clarified the objectives of this special study, developed further the workplan and gave an initial list of institutions in the region which would be involved in implementing the studies. The Inception Workshop drew heavily on the original Project Document as well as the findings of the International Conference on the Conservation and Biodiversity of Lake Tanganyika in 1991: many of the delegates at the Inception Workshop had attended this conference in Bujumbura where a discussion process had established a series of recommendations regarding further work on the lake. Details are contained in Section 7 of the Project Inception Report. The resulting study workplan has since been circulated to scientists in the region and has met with general acceptance. To date there are a number of field activities which have started.

The principal aim of the Special Study has been focused on collection of information which would assist with the directing of management decisions. Simple questions related to sedimentation involve examining the impact of sedimentation on the biota of Lake Tanganyika and whether (and how) changes in land use have affected the amount and impact of suspended matter during the last few hundred years. It is important to consider the long-term requirements of the management effort on the lake and an attempt has been made to strike a balance between current knowledge (and therefore actions that could be immediately recommended), what new information can be gained during the period of the project for implementation prior to the end of the project, and what information is required to direct a long-term monitoring programme within the capacity of the National Institutions of the four riparian countries.

It is felt, for reasons described below, that an extension of 6 months (until October 1999) of the Special study completion deadline would both improve the quality of output and increase the amount of regional involvement.

Within the Special Study the main work topics have been derived through a process of review and local consultation. It is generally agreed by all consultants that work quality would suffer if all aspects of the work were attempted in all four riparian countries. Avoiding costly duplication is a compromise allowing improved quality at the individual centres. For this reason some of the principal topics will mainly occur in one country or institution though fieldwork may extend throughout the lake. Applicability to all parts of the lake is, however, a priority and this has been considered in the derivation of workplans. In addition there has been effort to spread the Special Study input evenly between the four riparian countries. It is hoped that a free movement of scientists from

National Institutions of other riparian countries will allow scientists to participate and gain training at the appropriate centre of activity which matches their own disciplines.

Work on this special study is progressing on a number of fronts to meet the specific work objectives outlined in the study Workplan. This work is being co-ordinated by Dr G. Patterson of the Natural Resources Institute; Dr Patterson has made four trips to the region with the objective of putting together teams of scientists (regional and visiting) to carry out fieldwork and interpret results. These teams are briefly summarised below, broken down into smaller study components within the larger Special Study.

#### *Training*

Various training initiatives will contribute to all parts of the special study designed to raise capacity wherever this is deemed necessary. A general two-week training course for technicians on sampling, handling, description and analysis of sediment material was held in Kigoma during September 1997.

#### *Land-use (catchment) studies*

An interdisciplinary team (principally physical and social scientists) to review land degradation in the lake basin, its downstream linkages with lake degradation, and the management implications. There will be a strong GIS component, to utilise the digitised vegetation maps available from the Institute of Resource Assessment, University of Dar es Salaam.

Installation of the NOAA satellite receiver is currently underway in Kigoma and remotely sensed data will be available to identify areas of high erosion risk which will assist in directing field studies on land use and the point of impact on the lake from that particular catchment. It is envisaged that this will be able to provide an ongoing assessment (or forecast) of risk, based on the dynamics of vegetation changes and rainfall (and incorporating data on slope and soil type). Four members of staff from the Tanzanian Department of Meteorology are being trained (by R. Loftie of NRI) in capture, processing and interpretation of satellite imagery.

#### *Archive and current river data.*

Generally, for the last two decades, very little river gauge data has been collected in the region due to general run-down of those National Institutions charged with that responsibility. There are some prior archived data commencing early this century.

Dr Henry Sichingabula of the University at Lusaka has taken a lead in putting together a team, along with members of the Department of Water Affairs, to examine archive river data in Zambia. This team has visited the lake catchment and are currently following up on their recommendations for improving hydrological data collection in the region. They are also compiling a report on archived data.

A similar contract is at an early stage with the Water Department of Tanzania. The project has access to a lot of archive data from the Luiche River, a large river which outflows near Kigoma. Gauge data is no longer being collected on this river; the project

has, however, refurbished the gauging station on the Luiche and data is now being collected (flow and sediment load). This information will be essential to other special studies (particularly pollution and biodiversity) which have identified the Luiche River delta as a prime site for intensive study. Dr Duck of the University of Dundee is assisting with this work.

More specific work has been initiated in Tanzania under the supervision of Dr Nkotagu of the Department of Geology, University of Dar es Salaam, with the recruitment of a postgraduate student (Mr Rubabwa) to examine the hydrology of a number of catchments (of variable human impact). This work will be supported by analytical facilities at the University of Arizona where Dr Nkotagu will visit to assist in certain isotopic analysis. This project also involves the co-operation of the Tanzanian Bureau of Standards (for other analytical work), the Tanzanian Water Department (for archive data and routine sampling) and the Tanzanian National Parks Authority (rainfall data collection and general field support). Mr Rubabwa has been until recently the acting Kigoma Regional Water Engineer and his involvement in the project has been enabled by Mr Msuya the Director of Water Resources in the Tanzanian Ministry of Water.

Terms of Reference for similar work have been sent to the Institute de Geographie de Burundi for their consideration. This will be followed up with a field visit in November 1997 by the Scientific Liaison Officer.

Mr. Bombi Kagogozo of the Centre Recherche Hydrobiologie (CRH), Uvira is currently compiling the limited data available from the Democratic Republic of Congo (DRC). It is hoped to initiate work at CRH, though at the moment the priority is to equip their laboratory to resume basic functions (all equipment was looted during the recent civil war). Other archive data for DRC that exists outside the region has been examined but is not thought adequate for project purposes.

*Delta studies (coring activities)*

An understanding of sedimentation rates and sediment transport can be gained by an intense sediment coring programme in selected deltas. Two coring cruises of the *RV Tanganyika Explorer* are intended to provide the material to describe the changing impact of sediment. The analysis of fossil remains of both lake organisms and watershed plant pollen, as well as the variation in radiochemical tracers, are intended to allow an understanding of the changes that have occurred in the lake over the past several hundred years. This work will principally be under the guidance of Prof. Andrew Cohen of the University of Arizona.

The first cruise work was carried out in February 1997 and the second proposed for January 1998. Core analysis work is ongoing. This paleolimnological work forms a major component of the Special Study - local institutions will be involved in this work, particularly the Departments of Geology and Marine Sciences at the University of Dar es Salaam, the Department of Biology at the University of Burundi and the Department of Geologie et Mines, Burundi. We are trying to recruit a trainee for longer term work on this part of the project who will be based for some time in the USA doing fossil pollen

analysis. Training in this specific piece of work is not possible in the region as there are no suitable pollen collections to assist with identification. Part of this work programme will involve the establishment of a regional pollen archive.

Core materials will be archived in the region and a regional depository for cores (which would also serve other GEF projects) is being considered - the obvious base for this is Tanzania since it is also involved with the Lake Victoria and Lake Nyasa/Malawi GEF projects.

#### *Hydrology and sediment distribution*

The movement and distribution of suspended material on entering the lake is dictated by the near-shore hydrology of the lake and the nature and behaviour of the suspended particles in the water column. Models of Lake circulation will be provided by the LTR sub-component of the project and this will be integrated with direct measurements of near-shore water profiles and information from river monitoring and satellite imaging on density of water (whether overflow or interflow is predicted). Meetings have been held with FAO/FINNIDA scientists working on the on the Lake Circulation model (under the inter-agency agreement) to ensure that they will also be considering near-shore water movements and the hydrology of river inflows. This information will assist with an understanding of sediment distributions and will compliment the paleolimnological and hydrological work of this special study.

Recent discussion between the Sediment and the Biodiversity Special Studies have suggested that the use of side-scan sonar to aid in the mapping of sediment and habitat distributions in the shallow waters of the lake would yield rapid and useful data. This method would allow the project to direct more detailed survey work and would also allow a greater understanding of the horizontal impact of particular inflows of suspended material - important if zonation of the lake shore (for example establishment of underwater reserves) is recommended.

#### *Sediment chemistry*

The mineralogical composition of sediments is likely to be affected by both catchment geology and the changing vegetation pattern in the catchment altering the erosional state of the catchment. Analysis of sediment loads of rivers and sub-samples from sediment cores will allow investigation of this. The project has agreed to investigate the installation of mineral X-ray diffraction analysis equipment at the University of Burundi's Département de Géologie (under the supervision of Dr Nahimana - Acting Head of Department). This equipment has already been purchased by the Department but requires a qualified installation technician. Once this has been done then a programme of regional sediment analysis can commence. The manufacturers of the analyser (Philips) have been contacted with a view to supplying a trained technician.

#### *Limnological studies*

This aspect of the project is intended to examine how sediments affect the physical and chemical properties of the littoral and sublittoral zone. It will examine the principal limnological characteristics of the water column including light and nutrients (and their



respective cycles). It is intended that the main part of this work on nutrient cycles (and the impact of sediments) will take place in the Northern part of the lake (Burundi and DRC) for logistical reasons. Dr Leo Goeyens of the Free University of Brussels and Mr Peter Coveliers will make a visit to the region in November 1997 to initiate this work. Mr Coveliers was previously involved in work of this kind in Burundi, on the Centre de Recherche Hydrobiologique Applique (CRRHA) project. It is intended that the limnological work will link primarily to the University, the Départements de Eau, Pêche et Pisciculture and Geologie et Mines. A longer term and locally-appointed trainee on this sub-component may divide their time between the regional laboratory and the Free University of Brussels.

#### *Impact of sediments on productivity*

Production of benthic algae, phytoplankton and bacteria will be assessed in a range of sites of showing various degrees of sediment impact and using a range of methods. Ms. Catherine O'Reilly and staff from the Tanzanian Fisheries Research Institute (TAFIRI) commenced work (in April 1997) and have already collected a substantial amount of data. O'Reilly is working closely with the Malawi GEF (Dr Bootsma) project in order to harmonise methods. It is intended that field measurements will be made in other parts of the lake once the methods have been resolved.

#### *Impact of sediments on biota*

The aim of this aspect of the work is to assess the impact of high sediment loads on key taxa through comparative sampling of impacted and non-impacted (pristine) sites and experimental studies.

The proposal for the work is in the latter stages of development and will principally take place in Zambia where a number of sites have been identified. The package was put together during a field visit to the region by Dr Irvine in September 1997 - it will involve input from Dr Eric Verheyen from the Belgian Museum of Natural Sciences. It will also involve the recruitment of a postgraduate scientist from the region - David Chuba a graduate of the University of Zambia (with a Diploma in Research methodology from the Danish Bilharziasis Laboratory) has been proposed. This work will principally be based at the Zambian Department of Fisheries Laboratory in Mpulungu. Staff training in aspects of this work has already taken place - the work will rely, however, on the long-term input of a scientist qualified at postdoctoral level to supervise field studies. The project is currently seeking a scientist of the appropriate calibre.

#### *Links with other special studies*

Though work packages are necessarily broken down for convenience there is a great deal of emphasis on synergy within the Special Study and between special studies.

Liaison between the Special Studies is ongoing. The logic of simultaneous sampling is evident where effort can be minimised and interpretations between special study topics are required. In particular the Sediments (and Pollution) study must guide the Biodiversity Special Study to sites of low and high contaminant stress in order to understand the impact of these parameters on biodiversity itself.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

Fieldwork is well underway and appropriate teams of national and visiting scientists are co-operating and developing or implementing work proposals. Bringing National Institutions into the project, however, is a slow process. This is particularly the case in Burundi and the Democratic Republic of Congo where security reasons have caused delays. In addition a lack of regional capacity in certain areas has also led to delay where a larger than anticipated training input is required. For this reason a longer time-frame for completion of Special Study activities would allow for greater regional support and involvement as well as allow greater quality of output through a more careful and appropriately paced training programme. It would be preferable if the completion date of the special study would be put back to October 1999. Overall resources available to the special study do not, however, require adjustment.

**Output 5.2** Determination and the prediction of consequences of chemical pollution discharged from land or boats.

**Scheduled completion date**                      **Actual/expected completion dates**

April 1999

April 1999

**Describe the present status of the output:**

The Special Study on ‘Pollution and its Effects on Biodiversity’ aims to, identify the main sources of pollution to Lake Tanganyika and, where possible, quantify the pollutant inputs; obtain a lakewide assessment of pollution and its effects on lower organism biodiversity; evolve systematic programmes of pollution and biodiversity description and monitoring that are repeatable - such that change (or lack of change) can be determined with confidence; develop (in each of the riparian countries) teams capable of maintaining the investigations from planning and executing field and laboratory programmes, to analysing data, and reporting on the findings in the most appropriate ways to fellow scientists, lake managers and policy-makers; develop pollution control strategies as necessary.

As with the other special studies, the Baseline Review on “Pollution and its effects on biodiversity in Lake Tanganyika” identified and publicised the *raison d’être* of this special study. The review also aired preliminary views on the basic approaches and the resources required both in human and physical terms. At the Inception Workshop the objectives and work plan of the special study were further developed, and the list drawn up of institutions in the region which would be involved in implementing the studies.

The main strategies to emerge from this process may be summarised as follows:

1. The main sources and types of pollution to the Lake have been identified through map analyses and consultation with African personnel throughout the region but especially at the Inception Workshop. The pollutant loads will be quantified through careful, systematic and thus, repeatable, field sampling and laboratory analytical protocols and programmes which have been started. The pollutants of main concern fall into two major categories: (i) eutrophication accelerated by Man through inputs of phosphorus and nitrogen that can lead to burgeoning algal blooms, consequent decreased water clarity, and possible alterations to lake trophic structure, and (ii) more traditional (industrial) pollution involving heavy metals, pesticides and hydrocarbons including oils.
2. Lakewide assessments of pollution and its effects on lower organism biodiversity have started with the first samplings in the Kigoma (Tanzania) and Mpulungu (Zambia) areas, with analyses of nutrients and preliminary examination of the phytoplankton, zooplankton and the microscopic assemblages of algae and invertebrates on the surfaces of littoral sands, stones, rocks and cliff faces.
3. Systematic programmes of pollution and biodiversity description and monitoring that are repeatable - such that change (or lack of change) can be determined with confidence - have been initiated through many one-to-one discussions in the field and at the microscope, but especially at the 'Limnological Field and Methods Training Workshop'

held in Kigoma 22 September - 2 October, 1997. This strategy acknowledges first, that the Biodiversity Special Study is concentrating on the larger biota, and second, that (as emphasised in the Pollution Special Study Baseline Review) there is some information on pollution and many references to biota, but a dearth of data relating pollution status of e.g. water, silts or rock face material, directly to the biota in these environments.

4. Through an on-going series of training sessions (initiated by the 'Methods' Workshop referred to above) the PSS is developing (in each of the riparian countries) teams capable of maintaining the investigations from planning and executing field and laboratory programmes, to analysing data, and reporting on the findings in the most appropriate ways to fellow scientists, lake managers and policy-makers.
5. Pollution control initiatives may be developed as required during the course of the study eg, fuel oil terminal in Bujumbura and oil waste disposal at Kigoma power station.

### **Progress and current status**

#### *General*

Three principal locations in each of the four countries, giving a lake wide coverage, have been identified as the main sources of pollution the sites where the magnitude of pollutant inputs will be quantified.

Diversity of the assemblages and communities of small biota, are being measured and monitored in a systematic and repeatable manner and related directly to pollution status of the environments. Only in this way can the effects of pollution on these biota be properly established, and spatial and temporal changes (or lack of change) in the situation be determined with confidence.

To increase awareness of the PSS, talks and discussions have been held on the Project - and especially on issues relating to pollution and its effects on biodiversity - to the following:

Fisheries departments in Mpulungu and Nsumbu (Zambia) and the Tanzanian Fisheries Research Institute in Kigoma (Tanzania); Water Affairs Department in Kasama (Zambia); the Environmental Council, Zambia in Lusaka; the Fisheries Department, and the Mount Makulu Central Research Station both in Chilanga, Zambia; and secondary schools in Kigoma and Mpulungu.

#### *Institutional collaboration and staffing*

The improvement of human capacity in the responsible institutions has been a major goal of much of the PSS's work since the inception of the Project. As such - and at the time of writing - the following personnel have been assigned to the project for long-term training and/or participation in the pollution study

Tanzania: Lead Institution, Tanzanian Fisheries Research Institute. (TAFIRI)

In Kigoma: Grace Bwathondi, Dionatus Chitamwebwe, Edmund Kadula, Meshack Kajelelo, Ibrahim Katonda, Elias Lyoba, Dinna Lyoba and Stanslaus Muhoza.

Zambia: Co-ordinating institution Environmental Council of Zambia, Pollution and Sediment study coordinator Mr Christopher Kashinga.

Lead implementing Institution, Department of Fisheries in Mpulungu: Leonard Mwape, Kosam Kaweme, Charles Lukwesa and Isaac Zulu and 3 laboratory assistants to be selected.

Burundi in Bujumbura: Gabriel Hakizinana, Aline Irimbere; and appointments to be made by Dr Bailey-Watts and Mr Hakizinana.

Congo in Uvira: K Tshibangu and appointments to be made by Dr Bailey-Watts and Mr Tshibangu.

Until recently, Drs Bailey-Watts and Foxall have constituted the sole expatriate presence on the PSS, with the former being overall Co-ordinator and director of the studies concerned with eutrophication and the diversity of the lower biota, and the latter providing inputs to the more advanced chemical work - on hydrocarbons, pesticides and heavy metals. Mr Alex Kirika (IFE, Edinburgh) (short term inputs) to help with the organisation of equipment and laboratory facilities. Miss N Wiltshire has recently been appointed to the PSS; she will reside in the region from mid-November, with the purpose of training, overseeing and supervising all aspects of the PSS Work Plan in the anglophone region, and maintaining a continuous contact with the IFE coordinators in UK.

It is an important requirement for the success of the study that a similar individual is appointed for the francophone region which currently houses the principal point sources of pollution.

#### *Infrastructure*

The first laboratory (in Kigoma) has been established, and staff have already embarked on the first preliminary routine pollution and biodiversity surveys. Parallel biological work has started in Mpulungu, and as soon as the (imminent) installation of laboratory furniture is complete, Drs Bailey-Watts and Foxall and Miss Nicola Wiltshire will supervise the unpacking and setting up of the field and laboratory equipment and instrumentation in that laboratory, and initiate training in pollution monitoring there. The third laboratory resource - in Bujumbura (Burundi) - was decided on during a visit in September 1997; equipment is to be dispersed between the premises presently occupied by the Lake Tanganyika Research (LTR) FAO FINNIDA the adjacent Fisheries Department and the INECN facility.

As the CHR facility in Uvira was left completely bereft of equipment subsequent to the civil unrest a full needs appraisal it to be undertaken to assess the most practicable and cost effective means of setting up a functional laboratory.

#### *Links to other special studies*

Through its investigations on the associations between pollution and the lower microscopic biota, the PSS is contributing to debates on the siting of the underwater reserves.

Links to the Special Study on 'Sediment and its Effects on Biodiversity' and the PSS: This link is reflected in that a number of feeder and delta water samples that will be collected by the SSS for sediment analysis, will also be analysed for nutrient and pollutant content in the PSS laboratories. SSS estimates of river discharge into the lake will be crucial to the successful estimation by the PSS of pollutant loadings from the catchment.

Links to the Special Study on 'Biodiversity': Through its focus on the smaller ( 1mm) biota and their nutrient and pollutant content in open water (plankton) and attached (epibenthic) assemblages, the PSS is working closely and satisfactorily with the BIOSS team. Sites and frequency of sampling for pollution-biodiversity studies are harmonised with those relating to surveys and observations on e.g. fish and large invertebrates. A number of water, plankton and epibenthos samples from deep locations e.g. 25m, have been collected by the divers and dive trainers and submitted to the PSS for chemical and biodiversity assessment.

Links with the Environmental Education Special Study: The PSS consultant team have from the outset of the Project identified many links between the basic investigative work of the PSS and certain strands of the environmental education SS. As first steps we suggest the establishment in - each of the four main Project centres - of a room displaying PSS literature and having facilities for talks, seminars, slide and video shows. Posters of Lake Tanganyika issues - including photographs of representatives of biota at all trophic levels - from microbes to hippos are needed. The PSS consultant team has also considered the real possibility of organising 'work experience' schemes for senior science school-leavers in conjunction with teaching staff.

*Developing pollution control strategies*

In Kigoma already, attention is being given to ways of minimising localised but substantial ingresses of oil the lake from an electricity-generating plant, and small though numerous outfalls of domestic sewage. In Bujumbura it is expected that the project will get involved with ensuring that a proposed lake shore oil terminal will meet acceptable environmental standards.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

The long-term monitoring programme has started. Thus, at the time of writing, the PSS is clear on (i) its approach to assessing the nature and extent of the effects of pollution on the diversity of the lower organisms ( 1mm) - especially phytoplankton and micro-algae associated with substrata ranging in size from underwater cliffs and boulders down to fine silts and muds (ii) where samples will be collected in each country (iii) which materials (biota, muds, scrapings from surfaces of rocks etc., will be collected and analysed, and above all (iv) the training in field and laboratory methods - and attention to 'science-to-policy' strategy - that will be carried out.

However, in contrast to its good progress towards developing long-term 'monitoring' activities, long-term research programmes have hardly been considered. This is primarily due to the general lack of enthusiasm for environmental chemistry and associated studies on the lacustrine lower biota with which Drs Foxall and Bailey-Watts received during initial visits to the biological departments of the University of Dar es Salaam and, to a lesser extent the university of Zambia in Lusaka. However, visits to Burundi in November 1995 and September 1997. suggest that some of the recent graduates from the University

of Burundi may be interested and this resource needs to be tapped. Very recently too, we have received the cv of Dr Frances M.M. Chale (Tanzanian) who has just returned from work overseas and it is hoped he will join the PSS team; his input will strengthen our programmes on heavy metals, pesticides and oils and oil residues substantially.

**Output 5.3** Determination of patterns and structure of biodiversity in Lake Tanganyika with emphasis on proposed national parks and other conservation areas.

<b>Scheduled completion date</b>	<b>Actual/expected completion dates</b>
December 1998	December 1998

### **Describe the present status of the Output**

The underlying premise that biodiversity results from variation in habitats is adopted by the Biodiversity Special Study (BIOSS) in meeting this output. An ecological approach to field research is advocated, which aims to further understanding of the relationship between community diversity and habitat type. Sampling approaches to biodiversity research have been established for marine aquatic and terrestrial environments and we have been refining these techniques to the Lake Tanganyika environment.

Dr Eddie Allison, BIOSS field coordinator, has led the further development and field testing of the research programme in recent months. It is as follows: the underwater habitat is mapped using a manta survey, i.e. a diver is towed parallel to the coast and estimates the relative proportion of each substrate type in a set time. This technique is well established and is an efficient method of classifying habitat types on a coarse scale. For example, the entire coast of Gombe National Park (16 km) was surveyed by 2 teams of 4 regional divers in one day. Location data (GPS) and relevant land based features are noted from the boat. This is the first time that underwater habitat mapping has been conducted in Lake Tanganyika in a rigorous manner and is essential for locating potential sites for conservation and tourism.

Detail is added to the overview provided by Manta board surveys by divers conducting vertical profiles in 25 m transects perpendicular to the coast. Using the same transect, the next dive teams conduct surveys to sample the fish and molluscs. Several techniques have been used, including rapid visual census and stationery point census for fish communities while molluscs sampling uses both transect searches and quadrat censuses. In support of this diver-based sampling programme, we set traps for crabs, take grab samples for invertebrates and set gill nets at various depths.

The strategy is to begin intensive field activities in established national parks and then to build on this experience to move into other key areas of the lake. These additional areas will be identified through analysis of existing data, the collation of which is an ongoing process in the BIOSS. In addition to the requirements of this output, we are targeting national parks as the catchment is protected and so providing 'un-impacted' sites for

comparison with impacted sites with respect to sedimentation and pollution. In addition, the relationship between the parks and their neighbouring communities who rely, to varying degrees, on resources in the parks or near to its borders (e.g. fishing) is of interest to the project. Thus these key locations provide a useful focus for integrating the various special studies of LTBP.

Often very little is known about the aquatic habitat adjacent to the parks and the degree of aquatic protection varies between them. For example, Nsumbu (Zambia) and Mahele (Tanzania) boundaries include some of the lake while Gombe's (Tanzania) border falls 100m short of the lake edge. Similarly the boundary of Ruzizi National Park (Burundi) falls short of the lake edge.

As part of the training programme for BLOSS field teams the Francophone teams (Congolese and Burundian) accompanied the Tanzanian team to Gombe National Park (GNP). The park was chosen as a useful site to draw together each of the elements of the field programme described above and to give BLOSS teams experience of organising and running field expeditions. This compliments their technical skills of diving and sampling techniques and prepares them for conducting expeditions with very reduced international support. In addition, GNP was selected as a key issue for the park is the presence of beach seine camps on the coast bordering the park. Thus providing an opportunity to investigate the impact of beach seining through development of the field-based relationship between the Fishing Practices Special Study (FPSS) and BLOSS.

In the near future, we expect to extend this work to Nsumbu, where the programme will have to be refined in light of the particular constraints presented by this park, i.e. crocodiles and hippopotami! Similarly BLOSS teams will survey Mahale National Park.

However, the Francophone teams are well trained and their previous research experience makes them a valuable regional resource. Therefore, we expect to continue development of regional expertise by mobilising trained teams to work in each of the four countries of the lake. There are two critical advantages in this approach: first the trained team members maintain and continue to develop their technical and organisational skills and second these skills are passed on directly to their colleagues thus building regional capacity from within the region. Also the challenges presented by the extensive coastline of the lake are addressed by increasing the mobility of field teams. The exchange of experience among regional teams was evident on the Gombe trip as the local knowledge of Gombe provided by the Tanzanians (one of which is a TANAPA ranger at GNP) was complimented by Francophone skills in fish identification and ecology. This resulted from the long period of joint training which was facilitated by international consultants but is gradually becoming independent of this type of support. This is to be encouraged and further developed as an ideal example of institution building in the region.

In addition, database has been designed to collate existing data on Lake Tanganyika species and their distribution. Data entry is ongoing and terms of reference are currently being developed for a regional team to develop this aspect of the BLOSS. This database will be an important tool in the determination fo a conservation strategy for the lake.



**This status is Satisfactory/Unsatisfactory**

**Please explain.**

It has taken some time for the logistics and training to take place, but now national teams are functional. Nevertheless if momentum is to be maintained it is essential that a full time facilitator/trainer be appointed to the special study.

**Output 5.4** The damaging effects of exploitation on the fish of Lake Tanganyika will be investigated and recommendations made for their mitigation.

<b>Scheduled completion date</b>	<b>Actual/<u>expected</u> completion dates</b>
December 1997	August 1998

**Describe the present status of the Output:**

Both commercial and artisanal fishing present significant threats to biodiversity while providing an important livelihood for communities in the region. As a result, the Fishing Practices Special Study (FPSS) holds a critical place in the project as the link between Biodiversity (BIOSS) and Socioeconomic Special Studies (SESS). The unit of interest to FPSS is a 'fishing practice' which can be defined primarily in terms of catch composition. Practical differences between gears and their operation (e.g, time of day, fishing ground) may result in different impacts on biodiversity. The impacts may result from over-fishing, by-catch or fishing in sensitive areas, at sensitive times. As it is not the intention of the project to conserve biodiversity at the expense of riparian communities the socio-economic aspect of fishing practices will guide the management of this threat to the lake's biodiversity. In addition, the extent to which a 'damaging' fishing practice is employed will also determine the management response to the threat. For example, a practice with high biodiversity impact used by 50 people in the region would be a lower management priority than one used by 90% of fisher communities.

To date the appraisals completed in the region by FPSS (5 in Tanzania and 3 in Zambia) have been carried out jointly with SESS. In addition, links between the FPSS and the environmental education component of the project are clear and collaboration is developing in the field. The technical skills of the FPSS team are complemented by the socio-economic skills of the SESS/EE teams. The regional teams gain much by this multidisciplinary approach to understanding the threats, their causes and therefore potential mitigation measures.

The relationship with the BIOSS teams is now beginning to develop in the field. As the BIOSS programme is developing we expect greater degree of overlap and sharing of insights on the issues of fishing and biodiversity. A recent joint trip to Gombe National Park was the first planned exercise to investigate biodiversity in an area which is intensively fished. The aim of the joint study was that the BIOSS team map the underwater habitat of GNP, conduct fish, mollusc and other invertebrate census' while FPSS sample fisher catches on the beaches and assesses the relationship between fishers and Park staff on the through a series of interviews. This study was also designed to build the relationship between regional field teams and develop their skills and independence of international support. This growing independence was clear during initial field trips.

The FPSS team is drawn from three Tanzanian institutions: TAFIRI (1), Department of Fisheries (5) and Community Development within Planning Dept. (1). This core team draws on local experience during field work and may recruit individuals from a range of institutions, including national parks. This team is now well enough trained to conduct

appraisals independently of external support, in Tanzania at least. An appraisal planned jointly with SESS of the villages bordering Mahele will be managed completely by the regional team. While the Tanzanian FPSS team is confident and competent in the field, support on report writing and detailed analysis is still required. Therefore, continued involvement of international consultants is expected to develop these skills. The Zambian team shows great potential and will be operationally independent after one or two more intensive appraisals supported by external experts. Similarly consultants will facilitate report writing in Zambia where necessary.

Dr. Philippe Petit, FPSS field team coordinator, recently visited both Bujumbura and Congo to assess the opportunities for the FPSS to extend activities in these Francophone countries. Dr. Petit was able to identify potential team members but the political difficulties in these areas preclude field work out of the main centres. We feel confident of mobilising a team rapidly should the conditions in these countries improve.

As with the BIOSS, focusing attention on communities bordering national parks is a key part of the FPSS field strategy. The relationship between parks and their neighbouring communities are usually well established but may involve some degree of conflict, including fishing access. Nsumbu presents a particularly interesting case for FPSS as there is a traditional arrangement that allows one community to fish within the park's aquatic boundaries (Chisanse Beach). It is expected that Nsumbu will be a key Zambian focus for the FPSS, BIOSS and SESS to address some of the issues raised during preliminary appraisals.

With regard to the commercial fisheries, linkages are well established with the FAO/FINNIDA LTR project that is mandated to develop a regional management plan for the commercial fisheries which should become an integral part of the overall LaTSAP.

**This status is Satisfactory / Unsatisfactory**

**Please explain.**

This, one of the shortest of the special studies, has been in the field since September 1996 and is thus well advanced in the anglophone regions. The possibility of carrying out similar work in Francophone region is being actively pursued but will require an extension of the time period allotted to this special study.

**Output 5.5** Developments in other sector's within the lake basin intimately affects what happens to the lake itself. A detailed examination of present and future plans in these other sectors needs to be carried out so that they can be taken into account in the Lake Tanganyika Strategic Plan.

<b>Scheduled completion date</b>	<b>Actual/<u>expected</u> completion dates</b>
April 1999	April 1999

**Describe the present status of the output:**

The Baseline Reviews in particular the "Socio-economic and Sectoral Features of the Lake Tanganyika Basin" baseline study reviewed a wide range of sectoral plans affecting the lake basin and thus began the process of collecting and analysing the information contained therein. Much additional information was gathered during the Inception Workshop and during the visits to the region in August/September by the Special Study group co-ordinators. Contact has been made with all institutions and most other projects concerned with agriculture, fisheries, forestry, urbanisation, industrialisation and planning in general. As far as possible at this stage the indicated trends in processes that are likely to impact on the well-being of the lake will be incorporated into the proposed regional trans-boundary analysis discussed at Output 1.4.

Some key sectoral issues currently identified are oil exploration / exploitation, and transport and port development. In addition national and donor investment plans into the conflict and refugee affected northern part of the Basin are likely to prove important. To date the project has not been able to establish details of plans in these sectors, or their likely impacts, it is hoped that such information will be forthcoming through the National Working Groups and the proposed institutional analysis.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

This is an ongoing task and whilst currently satisfactory much more information will be required during the following twelve months in order to inform the Strategic Planning process. This is one of the areas that directed action on the part of the National Working Groups will be of great value to the project if the proposed terms of reference for these groups are adopted. (See Output 4.1)

The project could make an important strategic contribution by facilitating strengthened national and trans-national EIA procedures and capacity to address major sectoral development plans.

**Output 5.6** The prospects for the future of the lake management may depend upon additional benefits generated. The nature and direction of those benefits will be investigated and recommendations made for their distribution.

**Scheduled completion date**                      **Actual/expected completion dates**

December 1998

December 1998

**Describe the present status of the output:**

Subsequent to the production of the “Socio-economic and Sectoral Features of the Lake Tanganyika Basin” baseline study, which contains a preliminary study of tourism potential at Annex 6, and the completion of the Socio-economic and Environmental Education contributions (Section 6) to the Inception Report, based on the Baseline Review and Inception Workshop recommendations, initial practical assessment of the likely benefits of lake management has been tackled through PRA fieldwork at strategic lakeshore locations, in Zambia and Tanzania, including in the vicinity of National Parks - the likely sites of aquatic protected areas. However, there are as yet no specific management proposals to assess. General conclusions which can be drawn so far are:

- Fishing is the primary income source for lakeshore populations and restrictions on fishing are likely to result in short-run costs for fisherfolk gear operators and their employees, unless substitute livelihoods can be provided. Sustainable fisheries management (not the same as biodiversity management) can be assumed to yield greater net economic benefits in the long run, by averting fisheries collapse. However the short and medium term financial costs of management, monitoring enforcement and social compensation are likely to be high. Fisheries management as such is not presently within the purview of LTBP and the fisheries management proposals of the LTR/FAO project area awaited.
- Agriculture alone is unable to support local populations and cannot absorb labour displaced from fishing, because of poor soils, high erosion risk, high population / arable land ratios and underdeveloped agricultural markets and services.
- Complete exclusion of local fishers from aquatic protected areas, and increased enforcement is likely to be extremely problematic and deeply resented, unless both terrestrial and aquatic parks and their environs become subject to a “new deal” between park authorities, local government and communities, whereby local people are given a clear stake and a share of the revenue deriving from forestry, wildlife management and tourism, in addition to compensatory investment in alternative livelihoods, health and education (PRA work has revealed improved the control of water borne disease and education to be high priorities for local stakeholders)
- There are no demonstrable social benefits from aquatic biodiversity management as such and until specific management activities are identified, the only stakeholders

likely to benefit from “lake management” are national and international scientists and the corporate bodies charged with management and control.

**This status is Satisfactory/ Unsatisfactory**

**Please explain.**

- Because of the absence of proposals for future lake management, with the result that future socio-economic assessment is in danger of taking place “in a vacuum”. Timely output from project special studies concurrent with strengthening of institutional mechanisms for the development of national action plans will be required to generate management proposals and mechanisms for benefit sharing.
- The expected completion date of December 1998 is unrealistic in view of the lack of management proposals, unless the output requires a purely hypothetical economic analysis of the scale and distribution of costs and benefits.
- There is a clear need for the project to switch more attention to identifying the requirements for the relevant institutional support, this will be done through a detailed Institutional analysis and assessment, planned to begin in the new year, (see below).
- In addition there is a clear need for an experienced socio-economist to be based long term in the field to work with the national socio-economic coordinators to ensure that future work receives the necessary full time guidance and continuity.

***Institutional Analysis and Assessment***

To run parallel with and provide input to the planning process outlined under Output 1.4 the need for a formal Institutional Analysis and Assessment has been identified. This will be carried out as soon as possible under the direction of the socio-economic special study programme. Its purpose will be to bring together related ongoing activities within the project and develop a system to ensure that:

all stakeholders will be represented in decision making processes

management information will be disseminated to all stakeholders

rapid responses can be made to particular issues

the relevant institutions can be equipped and organised so as to enable them function in ways necessary for effective lake management

appropriate training can be delivered for human resources development.

**Output 6.1** Creation of long-term research and monitoring programmes.

<b>Scheduled completion date</b>	<b>Actual/<u>expected</u> completion dates</b>
April 2000	April 2000

**Describe the present status of the output:**

These will stem to a large extent from the findings of the various special studies and sectoral reviews providing recommendations through the national and regional institutional mechanisms responsible for the LaTSAP. It is important, however, not to view the monitoring aspect of this output merely as the establishment of a set of ongoing sampling protocols for various biological and water quality parameters, although these are of course essential, the monitoring programme must cover all three aspects of the Pressure - State - Response monitoring framework described under Output 1.4, if it is to be of real value.

**This status is Satisfactory/Unsatisfactory**

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**Output 6.1a:** A distinct project activity which may be considered as an additional output under this Objective is the Development of Remote Sensing and GIS Database components in support of the broader scope of Output 6.1 through addressing the remote sensing and GIS requirements of each of the Special Studies.

<b>Scheduled completion date</b>	<b>Actual/<u>expected</u> completion dates</b>
August 1999	August 1999

**Describe the present status of the output**

(a) LARST Remote Sensing System at Kigoma

Changes in TAFIRI staffing and the consequent need to identify suitable replacement counterparts for training delayed earlier installation of this equipment. Installation and training has been arranged for October 1997. The Tanzania Meteorological Service has offered to provide personnel to man the NOAA station at Kigoma. Final arrangements are now being made by project staff in Kigoma, for sourcing these staff from Dar es Salaam or from the Meteorology School at Kigoma.

(b) GIS and Project Databases

Feed back from Special Study team leaders assisted further design and collection of data sets for the GIS and Project databases. Further discussions were undertaken in mid 1997 with SSG leaders towards a clearer definition of database and GIS needs. A draft proforma spatial data input sheet was produced. Essential GIS development computer equipment and software was procured. NRI GIS staff (Mr. Rutter) visited the region to

conduct preliminary training in GIS for field teams at Kigoma and to discuss project GIS and database requirements and possible pathways. This recent visit underlined the need for further rapid collaboration to identify sustainable GIS development.

Maps of catchment altitude, slope and aspect were produced from the digital elevation model (DEM) acquired previously. A global ecosystems database and topographic data sets for each country in the region were acquired. Acquisition of archive (NOAA and Landsat) satellite data was progressed through contacts and archive searches at the Hartbeesthoek Receiving Station in South Africa. Contact was re-established with the Project Director of the Tanzania Forest Inventory and Management Project (T-FIMP) to obtain permission to use recent (1994) Landsat image data and land cover maps of the Tanzania portion of the Tanganyika catchment. A formal request for permission to use these data has been sent to the Principal Secretary of the Ministry of Tourism, Natural Resources and Environment, Dar es Salaam. A workplan for remote sensing and GIS inputs in support SSG activities was prepared. A map of the catchment was provided for inclusion in the Project publicity leaflet.

**This status is Satisfactory/Unsatisfactory**

**Please explain.**

The NOAA equipment has been shipped to Kigoma. Installation and local training are arranged. Acquisition of suitable GIS equipment, data and the generation of a number of products has occurred. Initial GIS training has been conducted at Kigoma and discussion of GIS and database pathways continues. Image data acquisition is proceeding. Support to the Project publicity leaflet has increased awareness of the GIS element of the Project.

Once installed and after initial training, the continued utility of the LARST NOAA receiver installation at Kigoma will be determined by continuity of local counterpart staff input and partly sustained by 'top-up' training in data collection and analysis, effective use and in applications development. Further consultation is required to ensure GIS and database requirements are clarified and agreed (for inputs, analysis and products required). Considerable effort is required to design an appropriate GIS for project use to ensure post-project sustainability.



**Output 6.2** Management plans will be drawn up for the development of four underwater reserves in Lake Tanganyika for the protection of biodiversity, the conservation of commercial fish nursery grounds and the enhancement of tourism.

<b>Scheduled completion date</b>	<b>Actual/<u>expected</u> completion dates</b>
April 1999	April 1999

**Describe the present status of the output:**

The definition of the proposed aquatic protected areas is being carried out by the Project through its implementation of Special Studies (Objective 5). Definition will be based upon several interrelated factors including:

- current ecological state
- nature of environmental threat
- existence of adjacent terrestrial/aquatic park already
- existence of human resources / institutional structures (GO/NGO) capable of managing or being trained in the management of the protected areas
- local communities understand and agree with need, and are involved in management
- other factors (political will, financial support)

Each Special Study is expected to prioritise suitable sites through the SAP process beginning with the proposed Regional Transboundary Diagnosis (see Output 1.4).

The central information base for selection of aquatic protected areas will be provided by the biodiversity Special Study (BIOSS) which will be responsible for making final recommendations to the LaTSAP Management Body on site selection. This SS will, however, draw heavily from all other Special Studies, in particular, the FPSS and SESS, to ensure local community input. Legal aspects will also play an important role in terms of helping development a workable framework of authority for the respective sites.

Initial SS work has helped foster relationships with staff from Tanzanian and Zambian national parks and, as active members of the BIOSS field teams, are receiving useful training in issues relating to aquatic parks. This activity will increase as the SS expands and clearly these staff will be expected to play an important role in the definition process.

The Project will consider other aquatic parks as potential models for Lake Tanganyika aquatic conservation and tourism development. The Mafia Island marine reserve in Tanzania is of particular relevance as is the Cape McLearn aquatic reserve in Lake Malawi/Nyasa. Activities are expected to include analysis of data provided by the SS's, site visits to existing and proposed reserves and series of regional workshops.

Staff from existing terrestrial parks on Lake Tanganyika are trained in aquatic research and are active members of the BIOSS field teams. The extension of these skills to other park staff is anticipated to rise as the field programmes expand in the region.

**This status is Satisfactory/Unsatisfactory**

**Please explain:** Whilst the basic elements of the programme are satisfactory there remain unsatisfactory factors, particularly difficulty of access to sites and potential sites in Congo and Burundi for security reasons. This has made a coherent programme difficult to organise regionally

**Output 6.3** Establish and manage new underwater reserves with trained management.

**Scheduled completion date**                      **Actual/expected completion dates**

January 2000

January 2000

**Describe the present status of the output:**

The definition and establishment of the reserves is covered under Output 6.2 above. Specific training inputs will be required by local parks managers (be they communities, district bodies, NGOs, institutions, or a combination of organisations with a clear and agreed management objective).

Those capacity building and environmental education inputs which are likely to play a major role in this regard and are covered under Objective 3. However, additional “learning by doing” will be provided through the following:

- involvement of stakeholder / managers in defining and establishing the protected areas (Output 6.2) including direct involvement in the SS activities;
- involvement of key staff in the SAP process (see Output 1.4).

**This status is Satisfactory/Unsatisfactory**

## IV. Evaluating project objectives

**Objective 1.** Establish a regional long-term management program for pollution control, conservation and maintenance of biodiversity in Lake Tanganyika.

### How can the achievement of Objective 1 be observed?

- When a Management Plan (the Lake Tanganyika Strategic Action Plan) is accepted by all riparian states, is supported by appropriate legislation and a Regional Management Committee and supporting technical committees are formally constituted and supported by legislation;
- When nationally defined action programmes contained within the management plan are funded and operational.

**Using the indicator criteria above, provide an assessment of the extent to which the project is likely to achieve this objective:**

*It is noted that considerable cross-over exists between stated Objectives 1 (“establishing the plan”) and objective 6 (“implementing the plan”) insofar as the Project considers that these Objectives should be considered integrally under the development of the Lake Tanganyika Strategic Action Plan process. Discussed in detail under Output 1.4. It is recommended that the tripartite review consider combining the two objectives under a single Objective 1.*

It is too early in the development of the strategic plan for a judgement to be made on the likelihood of achievement of this objective. Nevertheless provided the necessary national and regional institutional mechanisms with the required human resources can be developed and the riparian states continue to support the project and its purpose at the highest levels, then in spite of the prevailing constraints in the region substantial progress is possible.

**Objective 2.** Formulation of a regional legal framework for co-operative management of the lake environment.

### How can the achievement of Objective 2 be observed?

- When a draft regional agreement for the co-operative management of the Lake (“the Agreement”) has been drafted and approved by representatives from each of the countries.
- When the Agreement has been formally signed by all, or the majority, of the countries.

**Using the indicator criteria above, provide an assessment of the extent to which the project is likely to achieve this objective:**

The project is likely to be able to achieve the drafting of an appropriate Agreement and the prospects of getting the countries to sign up to it appear to be improving. However, whether or not each country signs the Agreement is a matter of foreign policy and obviously cannot be guaranteed.

Recent visits by the legal consultants to each of the four countries has confirmed that there is universal acceptance of the need for such a Agreement and that none of the Ministries responsible for foreign affairs had any objections in principle to the conclusion of the Agreement (on the contrary they were all supportive of this objective). However, the difficulties inherent in reaching agreement within the next three years between four countries, on a regional Agreement for the management of an important shared resource, should not be underestimated. A further complication in this regard is that not only will this require working simultaneously in French and English, but the two Francophone countries follow civil law traditions, whilst the two Anglophone countries have a system based on common law, although all are also influenced by customary African law.

The strategy being followed is described under Output 2.1

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**Objective 3.** Establish a programme of environmental education and training for Lake Tanganyika and its basin.

**How can the achievement of Objective 3 be observed?**

- When national environment education programmes involving NGOs and Government agencies are underway which address the specific issues related to the lake.
- When the effects of such programmes can be seen in terms of increased awareness at all levels, including policy level, and changes brought about in activities identified as deleterious to the well-being of the lake.
- When a cadre of trained environmental scientists and technicians are available to provide governmental institutions and the Regional Lake Basin Management Committee with the information and recommendations required to take rational management decisions.

**Using the indicator criteria above, provide an assessment of the extent to which the project is likely to achieve this objective:**

The greatest challenge will be to bring about permanent changes in established patterns of resource use which are identified as damaging to the lake. Moreover, given the long-term nature of any exercise aimed at enhancing environmental awareness, the sustainability of such programmes will depend on future financial commitments from national budgets and international donors. Given both the great scope of this objective and the financial limitations of the project, the intention will be to evaluate pilot activities which would then form the basis for future interventions.

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**Objective 4.** Establish tested mechanisms for regional co-ordination in conservation management of the Lake Tanganyika basin.

**How can the achievement of Objective 4 be observed?**

- When an operational Lake Tanganyika Basin Management Committee, as the principal body for regional co-ordination in policy management, exists that has demonstrated its ability to tackle the issues effectively by engendering appropriate action through a strategic planning process.
- When regular meetings of technical working groups take place within an overall monitoring and management structure with a clear mandate and the necessary resources to collect and analyse data from monitoring programmes and formulate recommendations for mitigation of threats to the lake's biodiversity.
- When a regional information exchange network exists to support national activities.

**Using the indicator criteria above, provide an assessment of the extent to which the project is likely to achieve this objective:**

By the end of the project the most appropriate structure within which monitoring and management policies can be formulated should be apparent and the Lake Management Committee should be in place. The successful long term operation of this structure will rest on the project's ability to raise the level of priority for lake conservation within all interested groups through the establishment of the appropriate institutional mechanisms and of fostering internal and external funding for ongoing monitoring programmes and specific interventions to address identified threats to the lake.

**Objective 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.

**How can the achievement of Objective 5 be observed?**

- Successful completion of the various special studies with published results and recommendations. These will identify trends in current and potential threats to the lake, make recommendations for mitigation and cost effective monitoring.
- Successful integration of monitoring and scientific research programmes proposals into a strategic planning process supported by the necessary institutional mechanisms.

**Using the indicator criteria above, provide an assessment of the extent to which the project is likely to achieve this objective:**

Provided the additional human and time resources requested in this report are forthcoming it should be possible to complete the special studies effectively in most areas of the lake. Nevertheless, the completion of all studies in a regionally integrated manner will depend on secure access becoming available to important and/or poorly studied areas of the lake.

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**Objective 6.** The implementation and sustainability of the Lake Tanganyika Strategic Plan and incorporated environmental management proposals.

**How can the achievement of Objective 6 be observed?**

- When underwater conservation areas are established in all four countries with operational management plans;
- When long term research and monitoring programmes are operational with funding for the time horizon of the Strategic Plan and which include the participation of all stakeholder groups;
- When operational management interventions are funded that are fully effective in identifying and responding to environmental threats to the lake and the needs of the communities affected.

**Using the indicator criteria above, provide an assessment of the extent to which the project is likely to achieve this objective:**

*It is noted that considerable cross-over exists between stated Objectives 1 (“establishing the plan”) and objective 6 (“implementing the plan”) insofar as the Project considers that these Objectives should be considered integrally under the development of the Lake Tanganyika Strategic Action Plan process. Discussed in detail under Output 1.4. It is recommended that the tripartite review consider combining the two objectives under a single Objective 1.*

The achievement of this objective is dependent on the largely successful achievement of the other project objectives and no further assessment is possible at this stage.

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***Development Objective***

**State the development objective of the project as given in Project document:**

The ultimate objective of the project is to demonstrate an effective regional approach to control pollution and to prevent the loss of the exceptional diversity of Lake Tanganyika’s international waters. For this purpose, the development objective which has to be met is the creation of the capacity in the four participating countries to manage the lake on a regional basis as a sound and sustainable environment.

**Describe signs suggesting that the project is making progress towards the Development objective:**

The current commitment of the governments of all the riparian states to the current project and the interest and enthusiasm expressed by other stakeholder groups, provide the base on which progress toward the development objective can be built. Success in achieving the objective will depend on a continuation of this commitment by institutions to the current project and then to the future rational management of the Lake Tanganyika basin in the face of conflicting pressures for limited and in some cases diminishing resources.

**Who are the Project Beneficiaries, and how do they benefit?**

The lakeshore communities, especially those in the larger population centres, which will benefit by the steps taken to avoid pollution of the lake on which all depend (for drinking water and domestic purposes). Development of new sustainable methods of income generation and local resource management should replace environmentally destructive ones currently in use and will benefit many rural communities.

People depending on fisheries, agriculture, forestry and other natural resource uses, will benefit from better resource management and possibly from increases in local income generation from tourism.

Government agencies responsible for national development at planning and implementation levels will benefit by increased capability to develop, monitor and manage the lake and catchment resource towards sustainable goals.

More indirectly, the world-wide community will benefit by the conservation of one of the most valuable lake faunas on earth, comparable to others which have been internationally recognised as heritages of mankind.

**Are there (they) any unforeseen effects either positive or negative?**

Currently none.

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**On the basis of Analysis in Parts III and IV above, give an overall assessment of the progress of this project in terms of achieving its immediate objectives:**

Much more than planned  
 More than planned  
 As planned  
Less than planned  
 Marginal or non-existent

**What action do you recommend to be taken by any of the three parties involved to improve the effectiveness of the project?**

Change technical approach  
 Undertake a technical review



Redesign one/more elements  
Reconsider institutional setting  
Initiate in-depth evaluation  
Other, please specify -

**Please explain:**

See summary of conclusions and recommendations.

**Description of overall status of the project (optional)**

## Monitoring record

### *Statistical summary of expenditures scheduled and incurred*

#### **Expenditure**

See respective Annex.

#### **Assets**

See respective attached table.

#### **Activities scheduled and carried out:**

Activity No.	Original start date	Original planned end date	Actual or planned start date	Probable end date	Comments

#### **Inputs delivered and documentation produced:**