

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

Progress Report

June to August 1997

NRInternational

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1. Project Coordination Unit

1.1. Project Coordinator

1.1.1. General summary

The socio-economic/EE and fishing practices special studies teams continued their field work in the anglophone areas while the other special studies have moved closer to finalising their workplans and have started preliminary training for local counterparts. Several of the special study coordinators and associated consultants visited the region this quarter including a visit by the legal studies coordinators to Congo, Tanzania and Zambia (trip to Burundi planned for October) that has carried forward this key aspect of the project. It is anticipated that information collected on these missions will be used in preparation for a full workshop early in 1998.

Subsequent to a visit by Kelly West and Phillippe Petit to Burundi, the way now seems clear to re-start activities in the francophone region. This will be initiated by a joint Burundi/Congo technical planning meeting to be held in Bujumbura on 16-18 September. Before the end of the year we expect to have a project office set up in Bujumbura (housed in Department of Fisheries) and to have equipment and other resources in place to begin work in areas adjacent to Bujumbura and Uvira.

Office/laboratory and boat refurbishment is complete or near completion in Kigoma and Mpulungu and laboratory equipment is in place. Requirements for similar work in Bujumbura and Uvira are to be assessed in the next quarter. In the mean time orders for utility vessels and additional IT equipment have been made for all four countries.

Apart from the dive/survey training now underway with participants from all four countries and the methods training workshop due to start in September, further progress has been made on the development of an overall project training strategy that includes university support. Nick Willoughby of NRI has been assigned to co-ordinate this aspect of the project. The main challenge is to identify clearly the gaps in capacity at all levels including those responsible for planning and policy implementation and to find the best means of filling those gaps in a climate where many government departments are under pressure to curtail rather than increase staffing levels.

Meetings of the National Working Groups were held in Lusaka and Dar es Salaam. It has been suggested that as soon as possible NWGs should hold a meeting at their respective lake stations and it has been agreed that the project should support this.

During this period the Project Coordinator visited Zambia (12 - 18 June), and took four weeks leave.

1.1.2. Budgetary Revision

A proposal for a revision of the Project Budget was submitted to UNOPS by NRInternational on 31 August 1997 and a response is currently awaited.

The budget proposed several important changes in our approach to personnel deployment. Significant amongst these were provision of long-term placements of international personnel (post-doctoral level) as trainers-cum-facilitators in the four main Special Study Group areas (Socio-economics, Biodiversity, Sediments and Pollution);

- provision of francophone coordination covering both training strategy
- and project coordination;
- aggregation of operating costs;
- additional funding for Legal Studies;
- identification of specific funds for regional workshops;
- additional provision for UK-based coordination of training, project
- strategy and general collaboration between Special Studies.

These changes were proposed as a result of experience and assessment of current capacity in lake shore stations and extensive consultation between the field and UK-based personnel. Of particular concern to all those involved in implementation of the project (including local stakeholder institutions in the region) is the need to maintain field continuity of support and facilitation in each of the major technical areas within the region that cannot be provided by the scientific liaison officer alone. The four proposed staff members are intended, therefore, to be instrumental in driving the project forward under the guidance of the PCU.

1.1.3. Goals for next quarter

The principal goals for the next quarter are:

to arrange the technical planning workshop in Bujumbura.

Visit Kinshasa and initiate National Working Group meetings for Congo

Establish a project presence in Bujumbura

In collaboration with National Coordinators prepare the Project Performance

Evaluation Report in preparation for the Tripartite Review proposed for December.

This will include inter-alia the proposed budgetary revision mentioned above.

1.2. Scientific Liaison Officer/Kigoma Station

1.2.1. Activities

From 5 May to 27 June, Mr. Dattomax Sellanyika (Gombe National Park) and Mr. James Wakibara (Mahale Mountains National Park) participated in the ICCE "Visions to Visuals" training course in UK where they learned how to produce environmental education materials using a wide range of technologies.

In order to boost project profile and interact more closely with TAFIRI, LTBP's principle host institution in Kigoma, project offices were moved from the SLO's residence to TAFIRI compound.

Kelly West and Philippe Petit went to Bujumbura to investigate the possibilities of initiating work in the Francophone countries. They held meetings with the National Coordinator, Technical Committee, Professors at the Faculte des Sciences, University of Burundi, Department of Fisheries, PNUD, etc. Plans were made to launch the project in the Francophone countries with a set of technical meetings slated for September. 4 Burundese and 4 Congolese were recruited for the dive training course. They accompanied West and Petit back to Kigoma. See Back to Office Report for more details of the mission.

A six week dive-training course commenced in Kigoma with participants from all four riparian countries. Will Darwall, Paul Tierney and Christian Fuhrer taught the course in English, French and sometimes Swahili. The dive-training course will be followed by an additional six week course in underwater research methods and habitat mapping.

The Wet and Dry Labs at TAFIRI compound were renovated. Refurbishment included: excavating of old floors, pouring of new floors, fabrication of lab benches, tables, and stools, rewiring of labs with new plugs wired into benches, installation of a new plumbing and drainage system, construction of a fume chamber, installation of shelves and fresh paint all around.

Ken Stride completed refurbishment to the R/V and the vessel is now in safe working order. Renovations included: repairing and cleaning the hull, repairing the shaft, overhauling the engine, replacing much of the electrical system, reinstalling guard rails, constructing an awning etc.

Maps of the Burundian and Tanzanian coastlines (1:50,000) have been assembled at Kigoma office.

Steve Evison, Claude Mung'ong'o and Philippe Petit departed for a PRA in Kirando

1.2.2. Calendar

- 5 May-27 Jun Dattomax Sellanyika and James Wakibara participate on ICCE training course "visions to visuals."
- 9-16 June Kelly West travels to UK for briefings with Special Studies Leaders
- 17-22 June West travels to Dar es Salaam for briefings with Project Coordinator
- 23 June West arrives in Kigoma
- 25 June Ken Stride travels to Mpulungu to work on the R/V Silver Shoal
- 25-29 June Tony Bailey-Watts visited the Kigoma Station for briefings with TAFIRI and SLO.
- 30 June Catherine O'Reilly arrives in Kigoma to begin primary productivity research within sedimentation special study
- 4 July Frontier dive trainers, Will Darwall and Paul Tierney, arrive in Kigoma

- 11-31 July Eddie Allison visits to develop methods with dive trainers
- 14 Jul-4 Aug West and Philippe Petit travel to Bujumbura, Burundi (via Dar es Salaam, Nairobi and Kigali) to assess the possibilities for initiating work in Burundi and Congo
- 21-28 July Tony Thompson visits from Lake Malawi GEF project
- 21 July Stride returns to UK
- 5 Aug West and Petit return to Kigoma with Burundese and Congolese students for the Biodiversity dive training course
- 12 Aug Dive training course begins in Kigoma
- 12-13 Aug Steve Evison and Claude Mung'ong'o arrive to prepare for PRA
- 15-29 Aug David Dettman visits from University of Arizona
- 21 Aug PRA team departs for mission in Kirando
- 26 Aug West travels to Dar es Salaam for briefings

1.2.3. Goals for Next Quarter:

- Hold technical meetings in Bujumbura to discuss the workplans and PSAP
- Hold training workshop in Kigoma
- Get LARST equipment installed and local collaborators trained in use and maintenance
- Get remaining institutions and collaborators on board with Memos of Understanding
- Resolve difficulties in moving nationals between countries through UNOPS and UNDP offices in each country
- Renovate TAFIRI stores
- Get administrative help for the Kigoma office
- Produce Issue #1 of LTBP Newsletter
- Begin development of the LTBP website
- Order boats for stations
- Order remaining IT equipment
- Open an office in Bujumbura
- Uvira reconnaissance mission

1.3. *Mpulungu station*

1.3.1. General

Ken stride completed his familiarisation visit in connection with Silver shoal. The National Working group became active again, holding its first meeting for more than 6 months. Paperwork in conjunction with the Kigoma training courses was completed. I spent 10 days away in Lusaka during July and was out of the office for 16 days in August attending the NWG meeting and other non project business. Also sick for 5 days.

We had a number of visitors detailed below I feel that as a result of these visits, more than any other we can feel that the project is beginning to make good progress.

The Diving group left for Kigoma to initiate training.

1.3.2. Visits

Tony Bailey Watts.

From 4 - 20 June. His major aim was to consult with a number of persons and finalise a list of Zambian personnel who would be associated with the project, especially the training workshop now scheduled for September in Kigoma. Apart from Fisheries staff in Mpulungu he also visited the provincial Water Affairs office in Kasama.

His visit was extended as a result of a request from Mr Nsongela, to encompass a visit to Lusaka, and there he met a number of persons to be associated with the project and clarified their position.

Dr Bailey Watts also visited Nsumbu and was prevailed upon to hold an impromptu meeting to discuss the project with local participants. A report of this meeting written by the local Fisheries staff is appended

Ken Stride

Ken visited from June 27th to July 4th to make a survey of the Silver shoal as a preliminary to ant real work. Unfortunately because of the use of this boat by the LTR Socio economic survey, there were only two days in which inspection of the boat was possible.

Still he was able to assess the equipment and personnel available to the Fisheries Department , and visit one or two companies. One company gave quotations for the job of renovating Silver shoal as US\$11,000 for complete renovation to US\$8,500 for a subset of jobs that must be done out of water. The only other company which may be both willing and able were not approached as the owner was out and the engineer on leave.

Paul Vare and Shadreck Nsongela, EE Co-ordinator.

They flew into Nsumbu on 18 August, and due to presence of the Fish Licensing Committee who had priority use of Silver shoal we were unable to meet them. Luckily they were able to survive somehow, and conducted some meetings at Nsumbu. They were picked up on Wednesday and brought to Mpulungu.

In Mpulungu a number of meetings were arranged with : Local School head teachers; The Ulungu Wane Group (a back to our traditions pressure group); Chongolo Club (a Nature conservation group operating in the schools); The Lake Tanganyika Drama Group; Harbour Authorities; and others.

A visit was made to Kapata village which is also a PRA village, together with the drama group and some of Paul's ideas which were new to the Drama group were field tested and apparently very successful.

A tentative local action plan for EE in Zambia was talked over and more or less mapped out.

Henry Sichingabula (UZ) and Dept of Water Affairs)

These arrived on 28 August and immediately embarked on an intensive program of;

- visiting all old water gauge stations, assessing their state and doing what rehabilitation was possible
- Collecting sediment and bedload samples from a number of streams and rivers.

They left on 11th September. A report is awaited

The team did a lot of hard work very efficiently, and worked well with Ken Irvine. Unfortunately on a visit to a very remote river gauge, along the worst road that I have ever driven along the LTBP vehicle they were using was caught in a bush fire. In the panic to escape the vehicle was driven into some felled trees that protruded into the road, and some paint work was damaged and doors were buckled. The doors have since been roughly straightened and don't look too bad, and the vehicle is perfectly usable, but some of the new look of the car has been lost.

They met with Graeme Patterson and discussed a possible contract with the project

Ken Irvine

Ken Irvine arrived on 31 August and he left by Liemba to go to Kigoma on 12th September.

He took samples of bottom fauna in the area of sedimentation off of river entry points; collected samples off of several rivers and made some preliminary sorting out of grab samples. He also surveyed the coastline of Mpulungu quite in order to identify an area suitable for sedimentation impact experiments to be carried out by DoF staff. In this he was not entirely successful, in that an ideal site was not identified. It will remain to be seen if the second best sites found will suffice.

1.3.3. Office rehabilitation

Is complete apart for the purchase of some equipment, and the possible work on the aquarium / museum, if any project members want this.

1.3.4. Laboratory rehabilitation

Two quotations have been received and the job given to a local contractor. Planks have been ordered and are being cut. Formica top has been bought and is awaiting transport. Work is due to start imminently. A consignment of 9 boxes of laboratory equipment was collected and delivered from Lusaka..

1.3.5. Utility boat construction

Quotations for the construction of Viking boats were collected from Harvest Help of Lake Kariba and the Copperbelt Boat Company (guessed name)

1.3.6. Other rehabilitation

A complete, costed list of requests from the Department of Fisheries has been received. These have been summarised and returned to the Department of Fisheries for prioritisation. One observation from myself is that the water level continued to fall this year, without the normal rise, and I feel that some work on the jetty to provide a berth for the Silver Shoal is now inescapable.

1.3.7. September programme

1. Attend National Working group Meeting
2. Confirm Chisanse solution with Chief Nsama
3. Laboratory Methods team to go to Kigoma

2. Progress reports of special study groups

2.1. Progress Report: June 1997 - August 1997 for "Biodiversity" Special Study and "Conservation Activities"

2.1.1. Overall Summary of Progress

Twelve regional counterparts are currently undergoing dive training in Kigoma: this will result in each riparian country having a basic team of BSAC-certified divers with skills in underwater survey methods and habitat mapping skills. The first steps are being taken to establish the BIOSS field programme with methodologies being developed and field tested. Dr Allison, field team leader, has proposed a joint SS document, "Standing Instructions" which will cover sampling methodologies and issues relevant to the field programmes of all SS's. The anticipated deadline for this document to be issued to institutions in the region is the end of the next quarter (November 1997).

2.1.2. Chronology of Activities

June: Dive equipment ordered and shipped to Kigoma, dive team briefing at MRAG with Dr Kelly West and Dr Graeme Patterson.

July: Dive training team to Kigoma, equipment unpacked and tested. Dive team assessed potential sites for dive training and worked on diving protocols.

July: Dr Allison to Kigoma, activities include: meetings with FPSS team regarding integration of field work, design and testing of underwater sampling techniques (fish census, habitat mapping) with dive team, field work in Luiche wetland with FPSS team, joint field visit (BIOSS/FPSS/SEDSS) to Gombe Stream National Park.

July: MRAG meeting with Dr Chris Sear (NRI) to discuss integration of SS's from the perspective of project data management.

August: Dr Allison met with Dr Luc de Vos (National Museums Kenya), Dr Geoffrey Howard (IUCN) to discuss the BIOSS work plan and potential for collaboration.

June-Aug: Discussions with Roger Bills (JLB Smith Institute of Ichthyology), Koen Martens (SIAL team, Royal Belgian Institute of Natural Sciences) and Dr Gashagaza Mukwaya (National University of Rwanda, formerly Uvira) on involvement in the training of BIOSS field teams and development of BIOSS work plan.

August: MRAG debriefing in London on Dr Allison's mission, including discussion on databases for BIOSS/FPSS field programmes and plans for consultant inputs. Summary of MRAG's ideas on data management issues forwarded to Dr Sear for further discussion. Dr Allison to Kigoma to complete summer mission.

2.1.3. Staffing Schedule

Special Study Director

Dr Ian Payne, MRAG Ltd

Field Team Leaders

Dr Eddie Allison, MRAG Ltd

Dr Philippe Petit, MRAG Ltd

Special Advisor

Dr Rosemary Lowe-McConnell (Independent) Dr George Coulter (Independent)

UK

Vicki Cowan (MRAG) Project support

John Pearce, Simon Holden (MRAG) IT specialists Nicholas Kotschoubey (MRAG)

Research assistant

2.1.4. Main Outputs and Achievements

The training of regional teams in diving and underwater survey methodologies has begun. Participants from all four riparian countries are involved in the training exercise and will be certified BSAC (British SubAqua Club) divers.

The field programme has begun with the development and testing of survey methodologies (particularly for underwater field work) and training of regional field teams to improve the capacity of African institutions to undertake biodiversity monitoring.

Experts on Lake Tanganyika (international and regional) contacted and involvement in the BIOSS field programme confirmed for the next quarter.

Roger Bills, Koen Martens and Gashagaza will provide guidance for the development of the work plan and provide specialist training to regional field teams.

2.1.5. Main Objectives for the Next Quarter

Regional consultation on the work plan and refinements made where required.

Details of the work plan, such as survey methodologies, indicator species, overlap with other special studies finalised after expert input in the field and intensive field training of BIOSS teams.

Capacity of regional teams for dive surveying, habitat mapping, regular biodiversity monitoring advanced through formal workshops and guided field work.

Plans for establishing the field programmes in Francophone countries developed. Should the field programmes be further constrained by political events, alternative plans will be made. For example, Francophone teams may be able to undertake field work in Anglophone countries to ensure skills and experience are built up and maintained.

Completion of 'Standing Orders' document to support the field programmes of all SS's.

2.1.6. Recommendations

Integration of special studies be given particular emphasis by all researchers as many field programmes begin in the next quarter, overlapping with those already started. This is a critical time to establish the details of SS overlap that will ensure the integrated analysis of data needed to support of the development of the strategic action plan.

2.2. Progress Report: June 1997 - August 1997 for "Fishing Practices" Special Study

2.2.1. Overall Summary of Progress

The field programme, established this year in the anglophone countries, progresses well. A joint appraisal in Rukwa region with the SESS is the major event of the quarter, with teams building on their technical field skills, appraisal methodologies and report writing. Expansion of the field programme into francophone countries was explored during a visit to Burundi: the FPSS field team leader, Dr Philippe Petit accompanied Dr Kelly West (SLO) on this mission. The overlap between FPSS and SESS is well established and with the recent activities on the BIOSS field programme this important relationship is being further developed in the field. A key activity in the next quarter is the regional discussion of the work plan: Dr Petit will represent the FPSS and recommendations will be taken for improving and developing the work plan. Of particular importance is the expansion of the SS's into Burundi and DR Congo.

2.2.2. Chronology of Activities

June: Preliminary trip to Rukwa to prepare for appraisal planned in August.

July: Tanzanian FPSS team accompanied Dr Allison to Luiche delta on a joint BIOSS/FPSS reconnaissance visit.

July/August: Dr Petit travelled to Burundi with Dr West, SLO, to assess the potential for initiating field programmes in Francophone countries.

August: Joint appraisal with SESS in Rukwa region.

2.2.3. Staffing Schedule

Special Study Director

Dr Ian Payne, MRAG Ltd

Field Team Leaders

Dr E Allison, MRAG Ltd

Dr P Petit, MRAG Ltd

Tanzanian Team

Mr Melchior Kissaka (TAFIRI, Kigoma)

Mr Omari Kashushu (TAFIRI, Kigoma)

Mr Juma Hamisi (DoF, Kigoma)

+ Mr Charly Mambona (of CRH, Uvira)

Zambian Team

Mr Joseph Chimanga (DoF, Mpulungu)

Mr Whiteford Chumba (DoF, Mpulungu)

Mr Charles Lukwesa (DoF, Mpulungu)

Mr Isaac Zulu (DoF, Mpulungu)

UK

Mr Mark Aeron-Thomas, MRAG Ltd

Ms Vicki Cowan, MRAG Ltd

Special Advisor

Dr Rosemary Lowe-McConnell (Independent) Dr George Coulter (Independent)

2.2.4. Main Outputs and Achievements

Joint SESS/FPSS appraisal in Rukwa region carried out.

Field team leader visited Burundi as important step in establishing field programmes in Francophone countries.

2.2.5. Main Objectives for the Next Quarter

Regional consultation on the work plan and refinements made where required.

Establish the practical connections between BIOSS and FPSS through intensive joint field. This will ensure complimentary data is collected and can be analysed in an integrated manner.

2.3. Progress Report: June 1997 - August 1997 for Legal Component

2.3.1. Summary of Activities

The international legal consultants visited Zambia, Tanzania and DR Congo. The mission was very successful with large numbers of regional counterparts from key institutions being met in each of the three countries (a list of people met is attached to this report). Unfortunately, the planned visit to Burundi was postponed due to logistic problems.

The visits served to: update the Legal and Institutional Baseline Review (Dec 1995); establish contacts with participants identified for legal workshop and other key officials; discuss potential future legal and institutional arrangements for the management of the lake; identify national legal requirements for EIA's in each country; and draw together recommendations for the future work plan for the legal and institutional component of the project.

2.3.2. Chronology of Activities

June/July: Drafting of three discussion papers for legal workshop
July: Tour of region visiting national institutions in Zambia, Tanzania and DR Congo.

July: Post mission debriefing with MRAG.

August: Legal Baseline sent to PCU for translation into French for circulation in next quarter.

2.3.3. Current Staffing Schedule

Special Study Director
Dr Ian Payne, MRAG Ltd

Legal Specialist (Anglophone)
Mr Cormac Cullinan, MRAG Ltd

Legal Specialist (Francophone)
Mr Stephen Hodgson, MRAG Ltd

2.3.4. Main Outputs and Achievements

Discussion papers for the regional workshop drafted. The papers are titled:-
International and Environmental Law and The Law of Transboundary Water Courses
Conflict Resolution Mechanisms in the Context of Natural Resource Management
Legal and Institutional Arrangements for the Management of Lake and River Basins:
Issues to Be Covered in A Treaty and Possible Approaches.

The last paper is a working document for the workshop which identifies potential points for inclusion in a regional treaty, each item is supported with examples from a

variety of international agreements. This provides a working guide to the drafting of the agreement for the regional management of Lake Tanganyika.

Three of four riparian countries visited and discussions held with key officials and policy-makers in national institutions. These meetings were critical first steps in establishing the regional team for the Legal and Institutional Study and initiating the consultation process that will develop this component of the project.

2.3.5. Main findings and preliminary recommendations from Zambia, Tanzania and DR Congo:

All three countries are currently undertaking substantial work in relation to revision of existing, and development of new, environmental laws and policies;

The potential for oil exploration in the Lake was raised, particularly in the North. This highlights the need for suitable legal mechanisms for environmental protection for the Lake to be addressed;

The nature and operation of the institutions required for effective regional management of Lake Tanganyika must be addressed. To this end it is suggested that the profile of the intended workshop participants be broadened from its current legal focus, to include policy makers from key stakeholder institutions and individuals with first hand experience of the lake. This would ensure that any recommendations regarding the long-term institutional and legal framework for managing the lake are well-informed, practical and widely supported. Administratively this could be achieved by running the workshop before or after a Steering Committee Meeting when many of the key individuals are already gathered;

The regional workshop would be the beginning of a process of drafting the regional agreement. It is envisaged that the workshop would mandate a drafting committee to prepare the first draft of the treaty. Smaller, more focused regional or national drafting workshops could then be convened where necessary to discuss the draft and propose amendments. The drafting and negotiation process would continue until the draft was acceptable in principle to the stakeholder Ministries in each country and then it would be presented to the four governments for negotiation at diplomatic level.

Depending on progress, it is uncertain how much of this process can be achieved within the current project. But it is widely accepted that it is critical for the project to establish the mechanism by which a regional agreement can be developed;

It is suggested that the project can lessen the emphasis given to harmonisation of laws of the riparian countries in the original project document. Discussion with national lawyers confirmed that it is unnecessary for the laws in each country to be identical or very similar in order to meet the project's objectives. It is more important 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; and, The legal component would benefit from closer interaction with the Socioeconomic Study to ensure that relevant information flows from lake-shore communities to the process of developing a legal and institutional framework for lake management.

2.3.6. Main Objectives Next Quarter

Potential for visiting Burundi to complete the national meetings in the region to be assessed jointly with PCU.

Letters to all regional counterparts to be sent out with copies of the Legal Baseline Review and the consultation document for the Preliminary Strategic Action Plan.

Discussion papers for regional workshop finalised.

Administrative arrangements initiated for the regional workshop, MRAG and PCU.

2.3.7. Recommendations

PCU to contact relevant institution in Burundi to seek names to complete regional legal team.

2.3.8. List of People Met

DEMOCRATIC REPUBLIC OF THE CONGO

Ministère de l'Environnement, Conservation de la Nature et Tourisme

1. Mr Benoit Kena Mwauke, Secrétaire Général à l'Environnement et Conservation de la Nature;
2. Mr Mbusu Ngamani, Directeur Chef du Service, Direction des Etablissements Humains et Protection de l'Environnement;
3. Mr Mady Amule, Directeur de la Gestion des Ressources Naturelles Renouvelables and National Project Coordinator;
4. Mr Kalibu Mino-Kahori, Directeur du Service National de Promotion et de Développement de la Pêche (SENADEP);
5. Mr Evariste-Christian Ngoy Mbele, Directeur Chef de Service, Chef de Corps d'Inspecteurs;
6. Professeur Kalambay Lumpungu, Professeur à la Faculté de Droit, Université de Kinshasa and legal adviser at the Ministry;
7. Professeur Nagahuedi Mbongo-Sodi, Coordinateur National de la Biodiversité au Congo;
8. Dr Kankolongo Mujika, Secrétaire Exécutif, CIC/CNUED;

Ministère des Affaires Etrangères

9. Mr Kumbu di Ndembe, Direction Afrique et Moyen Orient, Ministre Plénipotentiaire;

Ministère de la Coopération Internationale

10. Mr A. Kanda-Lonsa, Directeur de la Coopération Multilatérale;

Ministère de l'Energie

11. Mr Pili-Pili Mawezi, Chef de Division Exploration-Production, Secrétariat Générale à l'Energie;

12. Mr Charles Nseke Mbala, Chef de Bureau, Secrétariat Générale à l'Energie;

Ministère des Transports

13. Mr Lotanga Konga, Sous Directeur, Direction Marine et Voies Navigables;

Entreprises Publiques

14. Mr Malembu Mbo, Président Directeur Général ai, Institut Congolais pour la Conservation de la Nature;

15. Mr S. Luhuni Kitsidikiti, Directeur Technique a.i., Institut Congolais pour la Conservation de la Nature;

16. Mr Kabashi Tshijika, Président Directeur Général Adjoint, Régie des Voies Fluviales;

International Organisations

17. Mr Mathieu Ciowela Katumba, Adjoint au Représentant Résident, UNDP;

18. Mr Austin C. Amalu, International Programme Adviser, UNDP;

19. Mr Trinto Muganga, Regional GEF Coordinator;

TANZANIA

The Vice President's Office

20. Mr Rawson Yonazi, National Environmental Management Council (National Project Coordinator)

21. Ms Alicia B. Magabe, Legal Officer, National Environmental Management Council.

Ministry of Natural Resources and Tourism

22. Professor Said Idi, Director of the Forestry & Bee-keeping Division;

23. Mr Mayembe, Director of the Fisheries Division;

24. Ms Alice Chinguwile, Senior State Attorney;

25. Mr Thomas W. Maembe, Director of Fisheries, Fisheries Division;

26. Mr W. V. Haule, Senior Fisheries Officer, Fisheries Division;

Ministry of Foreign Affairs

27. Ambassador E.E. E. Mtango, Principal Secretary;

28. Ms Christine Kapalata, First Counsellor;

29. Ms Irene Kasyanju;

Ministry of Legal Affairs

30. Mrs Verdiana Nkwabi Macha, Senior State Attorney, Attorney General's Chambers;

Ministry of Agriculture & Cooperatives

31. Mr H.A. Dumea, Head of Soil Conservation and Land-use Planning;
32. Dr K.M. Majawila, Acting Chief Veterinary Officer and Acting Assistant Commissioner for Livestock Development;
33. Mr M.A. Mwenge, Range Management Specialist;
34. Mr D.M.K. Koggani, Range Management Specialist;

Ministry of Water

35. Mr J. Mosha, Senior Water Engineer;
36. Mr F.W. Masanja, Senior Hydrologist, on behalf of Mr Msuwya, the Director of Water Resources;
37. Mr D.G. Rutayshobya, Senior Hydrologist;
38. Mr J. Dukuduku, Senior Hydrologist;

Ministry of Public Works

39. Mrs. E. Magambo, Legal Advisor (formerly legal adviser to Department of Transport and Communications).

Lake Tanganyika Biodiversity Project

40. Dr Kelly West, Scientific Liaison Officer;
41. Dr Philippe Petit;
42. Dr C Lwoga;

International Organisations

43. Mr Sylvester Sisila, Assistant Resident Representative, UNDP;

Non-government Organisations

44. Rebecca Logsdon, Frontier Tanzania;
45. Brendan Turvey, Frontier Tanzania;

ZAMBIA

Ministry of Environment & Natural Resources

46. Mrs Marchaligine U.N. Nkhuwa, Deputy Permanent Secretary;
47. Mr Lubinda M. Aongola, Planning Officer, Planning & Information Department;

Environment Council of Zambia

48. Mr James Phiri, Director;
49. Mr Jacob Mshira, Senior Inspector for Water;
50. Mr Chris Kashinga, Senior Water Inspector;

Ministry of Foreign Affairs

51. Mr M. Mwanza, Director of Regional Cooperation;

Ministry of Energy & Water Development

52. Mr S.H. Hibajene, Deputy Permanent Secretary (T);

53. Mr Cecil D. Nundwe, Water Engineer, Department of Water Affairs;

Ministry of Legal Affairs

54. Mrs Doris K. Katebe Mwiinga, Chief Parliamentary Draftsman;

Ministry of Agriculture, Food & Fisheries

55. Permanent Secretary;

56. Mr H.G. Mudenda, Director, Department of Fisheries;

57. Mr Thomas Mubita, Chief Agriculture Officer, Horticulture;

Ministry of Wildlife & Tourism

58. Ms Agnes Seenka, Acting Chief Executive, Zambia National Tourist Board;

59. Ms Justina C. Wake, Development & Marketing Manager;

Lake Tanganyika Biodiversity Project

60. Dr Patrick Chipungu, SE coordinator and project support officer.

International Organisations

61. Mr Michael C. Soko, Assistant Resident Representative, UNDP;

62. Mr George K. Mburathi, Resident Representative FAO.

2.4. Progress Report June - August 1997: Socio-economics (SE) and Environmental Education (EE)

2.4.1. Overall summary of progress

Progress has been made this quarter in SE in Tanzania, where a further lakeshore PRA training and fieldwork has been undertaken with a national team, and with EE in Zambia, where a monitoring visit took place and a concrete plans for practical education work, at various levels, have been drawn up.

The main difficulty in this period has been a lack of practical progress with social science fieldwork as planned for Zambia, in the absence of a permanent social science field coordinator for the project, despite the excellent pilot work and initial stakeholder workshop.

Although practical work has still not been possible in Burundi and the Democratic Republic of the Congo it is hoped that the recent project mission to Bujumbura and the forthcoming bi-national steering group meeting in September will provide a solid basis for practical progress in the near future.

2.4.2. Chronology of activities

June 1997

- Preliminary project visit to Rukwa region, Tanzania; meetings with local government and NGOs involving SE and FP special studies and EE. Identification and recruitment of Rukwa team members, planning and logistics for lakeshore fieldwork

July 1997

- Rukwa preliminary visit report received from Petit (FPSS) and Said (EE - Tanzania)
- continued planning for Tanzania preliminary assessment mission to Rukwa region; identification and hire of national social science consultant, and PRA trainer / facilitator for Rukwa region work.
- development and circulation by ICCE / NRI of discussion document on the role of EE within the project
- Ms Laisha Said, NEMC, Tanzania resigns (again) as project National EE coordinator

August 1997

- Zambia EE monitoring visit, by Mr Paul Vare, Lusaka and the Mpulungu lakeshore area
- PRA training and fieldwork in the Kirando lakeshore areas of Rukwa region, with national team drawn from Kigoma and Rukwa government and NGOs. Led by

national Social Science consultant (Mung'ong'o) and assisted by PRA trainer facilitator (Evison), and integrated with Fishing Practices study fieldwork

2.4.3. Staffing schedule

International

Julian Quan, NRI Socio-economics and Environmental Education Coordinator
Paul Vare, ICCE Technical Advisors, Environment Education
Steve Evison, PRA trainer / facilitator and community forestry / terrestrial resource use specialist (recruited specifically for Rukwa PRA)

National

National project posts / secondees:

Shadrick Nsongela, ECZ: National EE coordinator, Zambia
Blandine Cheche (NEMC): National EE coordinator / project Information Officer, Tanzania
Mlotha Damaseke, MAFF: national social science advisor, Zambia
Beatrice Marwa, (Kigoma Region Fisheries Department) Local Environment Education Coordinator, Kigoma, Tanzania
Dattamax Selanyika (Gombe)and James Wakibara (Mahale): TANAPA collaborators with project EE activities

Consultants:

Dr Claude Mung'ong'o: Social science consultant, Tanzania (Institute of Resource Assessment, University of Dar-es-Salaam)
Dr Patrick Chipungu consultant, Zambia

2.4.4. Main objectives and achievements

- New national Social Science consultant recruited for Tanzania
- New National EE coordinator Tanzania nominated by NEMC following the erratic performance and presence and final resignation of the previous post holder.
- Practical work planning for EE in Zambia by national EE coordinator, supported by ICCE
- Project contacts established with regional government and local stakeholders in Rukwa region and practical fieldwork begun
- Further training and consolidation of inter-sectoral PRA field team for Tanzania

2.4.5. Main objectives next quarter (September-November)

- Full reports due from ICCE (Zambia EE monitoring visit), Mung'ong'o and Evison (Rukwa PRA)
- Draft TOR and workplan for interdisciplinary land use / catchment degradation desk /field study, to begin in Tanzania

- Clarification of work programme and contractual arrangements for Tanzania Social Science consultant with IRA Dar es Salaam University
- Tanzania PRA work around Mahale NP due October / November following return of local fishing fleet;
- Initiation of Tanzania EE programme and NGO collaboration in the field
- Recommencement of SE fieldwork in Zambia; begin implementation of EE work plan
- Training for Zambia and Tanzania EE coordinators at ICCE short course in UK
- Clarification of way forward for implementing national SE / EE work for Burundi, and Zaire
- Recruitment of full time international SE/ EE field coordinator (see recommendation below)
- Preparation of land use / catchment degradation and management study to begin, involving IRA as Tanzania institutional partner, but with incremental brief to continue work in other 3 nations. TORs to be finalised and work to begin as soon as possible.

2.4.6. Recommendations/conclusions

- Creation of full time SE/EE field coordinator post as recommended to UNOPS by NRI is an essential basis for continued progress with fieldwork in the run up to developing national and regional strategic plans during 1998 and 1999. Continued reliance on UK management / consultancy inputs and part time national staff is not sustainable or conducive to good national ownership and implementation of workplans.
- Forthcoming bi-national steering meetings (Burundi / Congo and Tanzania / Zambia) to review existing special study workplans as a whole; national groups to focus subsequently on SE and EE work plans and the possibilities for initiating pilot action in the short and medium term
- Urgent consideration of training and support needs for any EE and SE project staff and collaborators identified for Burundi and Congo, to enable initiation of workplans.

2.5. Progress Report: June - August 1997 for Special Study on "Sediment Discharge and Its Consequences"

2.5.1. Overall Summary of Progress

The main objectives for this quarter were given in the previous quarterly report as follows:

- To facilitate the training workshop in August 1997
- To commence a number of fieldwork activities in the region throughout the quarter.
- GP to travel to the field with Ken Irvine to initiate work on impacts of sediments on biota
- A programme to look at data archives to be initiated with R. Duck of University of Dundee in conjunction with regional departments responsible for river monitoring.
- To move towards a major exercise in assessment of land use and co-ordination of this with the river monitoring and lakeshore sediment work.
- To establish a coring programme for the lake with the other special studies to look at sedimentation rates, sediment type and the distribution of extant and fossil organisms.

Overall progress on these activities throughout the quarter was satisfactory. More detail is provided in Section 3.1.4

2.5.2. Chronology of Activities

This section lists one-off activities and does not take count of ongoing activities such as workplan development and field activities.

2/6/97 - R. Duck and C. O'Reilly meet with GP in London to discuss work plans. CO to Tanzania.

3-4/6/97 - GP to Brussels to discuss co-operative work with the Royal African Museum Dept. of Geology. Back to Office report produced.

9-17/6/97 - Kelly West in UK for briefing in UK prior to her heading for Kigoma. GP period on briefing.

16/6/97 - K. Irvine to UK to meet with KW and GP to discuss workplan on 'Impact of Sedimentation on Biota'

23-29/6/97 - GP at conference on Speciation in Ancient Lakes (not funded by GEF project) in Japan. Number of contacts made and discussion on conservation issues related to E. African lakes. Met with staff from Lake Malawi GEF Project.

15/7/97 - Project management meeting.

22/7/97 - Discussion with R. Lowe-McConnell on workplans for Sedimentation Special Study.

13/8/97 - Further visit to Brussels concerning co-operative work with a number of Institutions. Back to Office Report Produced.

2.5.3. Staffing Schedule

The principal investigators remain as stated in the previous quarterly reports.

TORs are being formulated for Dr Nkotagu of the University of Dar es Salaam to work on the hydrology of two catchments in the region of Kigoma. This work will be done in partnership with the Tanzanian Bureau of Standards (principal investigator Mrs Mbwambo). It will also involve the co-option of Mr Rubabwa of the Water Dept. who Dr Nkotagu will supervise for a M.Sc. at the University of Dar es Salaam. Two local members of the Dept of Meteorology are being sought to make the routine field measurements.

TORs are also being prepared for Dr Sichingabula of the University of Zambia to conduct similar work. This will involve staff seconded from the Water Affairs Dept. These staff have yet to be nominated.

Attempts to stimulate work of this kind (hydrological) in Burundi and Congo by sending letters and suggested Terms of Reference have so far failed. It is hope to rectify this at the forthcoming planning workshop.

Drs Jim McGill and Derk Verschuren have been nominated as shipboard engineers to ensure safety during deployment of heavy coring gear.

Drs Leo Goeyens and Eric Verheyen have been put forward to UNOPS as potential consultants on the work on impact of sediments on nutrients and biota respectively.

2.5.4. Main Outputs and Achievements

The delay of equipment arrival in Kigoma and Mpulungu (due principally to problems of customs clearance) have somewhat delayed field activities. At the end of the reporting period, however, these items had been cleared and were ready for shipping from the capital (in the case of Kigoma) or had arrived (Mpulungu)

The training workshop involving some 20+ participants has been prepared and is scheduled to commence on 15 September 1997.

Field work activities have commenced in the region a number of fronts. C. O'Reilly has been now been operating in Kigoma for three months and has instigated a number of collection programmes

Dr Sichingabula of University of Zambia and representative of the Zambian Water Affairs department travelled to Mpulungu at the end of August to begin work on monitoring river-borne sediment pollution in the Zambian part of the Lake Tanganyika catchment.

K. Irvine travelled to the Lake in the latter part of August to commence training and sampling on benthic invertebrates. His terms of reference involve the development of a programme to monitor the impact of sediments on biota. G. Patterson (Special study co-ordinator) is due to join him on 5 September in Zambia (Mpulungu).

A programme to look at data archives to be initiated with R. Duck of University of Dundee has not yet commenced.

Terms of reference to perform a land use study in conjunction with the Socio-economic Special Study have been drafted. It is intended that this study will probably concentrate on the Malagarasi swamp.

A contact draft has been prepared for the involvement of the University of Arizona (Prof. Andrew Cohen) to make a paleolimnological study to look at sedimentation rates, sediment type and the distribution of extant and fossil organisms.

A draft workplan has been made with L. Goeyens and P. Coveliers of the Free University of Brussels (Flemish) to examine the impact of sedimentation on nutrients. This will kick off with a visit to the lake by LG and PC sometime in November 1997.

2.5.5. Main Objectives for the next quarter

K. Irvine in field until 1/10/97. Principal objective to initiate work on the Impacts of Sediments on biota and formulate a coherent workplan with local institutions (plus some initial collection).

GP to region on 2/9/97 until 10/10/97. Principally to present and discuss overall workplan of Sedimentation Special Study at regional technical workshops (in Bujumbura and Kigoma - see below). But also to initiate work by Universities of Dar es Salaam and Lusaka (Section 3.13) as well as conducting work with K. Irvine, R. Duck and C. O'Reilly on impacts of Sediments on biota.

Training workshop will go ahead from 20/9/97-3/10/97. Rob Duck will be principally involved in the instruction of sediments component but also contributions from G. Patterson and K. Irvine

GP will take a prime role in the setting up of laboratories in Dept. of Fisheries, Mpulungu and TAFIRI, Kigoma, now that equipment has arrived.

Goeyens and Coveliers will visit the region during this quarter (Section 3.14).

The sediment study workplan (supplied with the Preliminary Strategic Plan) will be presented at the technical co-ordination meeting in Bujumbura in September by G. Patterson and then again to the sister meeting to be held in October in Tanzania. They will be modified as deemed appropriate after discussion with local technical experts. Draft work plans have, however, been derived after a series of meetings and correspondence between the Special Study Co-ordinator (G. Patterson) and scientists within and without the region.

A major effort will be made to prepare for a 3-4 week cruise in January 1998 for paleolimnological work.

GEF will make a small (3 day) contribution to a cruise organised by the Royal African Museum, Brussels this will allow us to test some equipment to be used during the Paleolimnological cruise. This will hold in November 1997.

2.6. Progress Report: March - May 1997 for the Special Study on 'Pollution in International Waters and its Effects on Biodiversity in Lake Tanganyika'

(NB - Inadvertently omitted from last quarters report; June - August follows herewith)

2.6.1. Overall summary of progress

In addition to attendance at Project Steering Committee meetings, the period saw the following:

- procurement of equipment for much of the field and laboratory activities envisaged for this fairly 'equipment-intensive' Study.
- completion of the Work Plan for the pollution and pollution-related biodiversity investigations, and identification of areas where harmonisation of sampling activities with those of the other Special Studies is crucial
- preparation and submission to UNOPS *via* NRI, a job description, contract and Terms of Reference for appointing a UK trainer/supervisor of the day-to-day activities in the region
- preparation and submission to the Project Director (Dr Menz) Terms of Reference and details for a forthcoming visit to Dar es Salaam, Mpulungu and Kigoma, to discuss regional staffing of the Pollution and Sedimentation Special Studies.

2.6.2. Brief chronology of activities and visits

Dr Bailey-Watts attended a project Steering Committee meeting at the Marine Resources Assessment Group, London in **mid-April** and a follow-up meeting at the same venue on **6 May** to explore strategies for harmonising (where appropriate) the sampling programmes of the three main 'ecological' Special Studies i.e. those concerned with traditional pollution, sediment pollution and biodiversity. He also hosted, on **23 May** at the Edinburgh Laboratory of the Institute of Freshwater Ecology, a meeting chaired by Dr Foxall (University of East Anglia) who has been given overall responsibility for the 'Limnological Field and Laboratory Methods Training Workshop' presently scheduled for 15 days in August; others present were Drs Rob Duck (University of Dundee) and Eddie Allison (also UEA).

2.6.3. Main objectives and achievements

With reference to this particular Special Study, but also considering links with the other Studies - especially those concerned with sediment pollution and biodiversity *per se* - the main objectives for the period were to make significant progress with the following

- the Work Plan
- the procurement of equipment for field and laboratory use
- the paperwork for UNOPS approval for appointing a UK graduate (M Sc level) to oversee and contribute to the training of national researchers, technicians and other field and laboratory operatives in the region, and
- preparations for a visit to discuss the appointment of Zambian and Tanzanian nationals to the project.

The full (draft) Work Plan was submitted to NRI towards the end of April (Bailey-Watts, A. E. and Foxall, C. 1997. *Work Plan for the Lake Tanganyika Biodiversity Protection Project (RAF/92/G32) Special Study on 'Pollution in International Waters and its Effects on Biodiversity'*. 18 pp including 5 Tables), and copies were also sent to the LTBPP Advisors Drs J F Talling and R H Lowe-McConnell for comments. Their comments are now being incorporated and the whole is being reviewed with the intention of producing a single document containing all the Project's Work Plans. The vast majority of the equipment items i.e. excluding a few specialist pieces of apparatus, have been collected together at a chosen laboratory suppliers based in Edinburgh. The crating of the equipment - for two of the African project centres in the first instance - has commenced, and air-freighting out to Africa is imminent. All documents (a *raison d'être*, Terms of Reference, Job Description and Duties, outline contract, and the *cv* of the prospective candidate for this post, along with a supporting statement from Dr Bailey-Watts) was sent to NRI in May for onward posting to UNOPS. The ToR for the assessment of personnel in Zambia and Tanzania that are required for the practical execution of the multifarious field, laboratory and data handling, analysis and interpretation, were submitted to NRI and the Dr Menz in May, and the visit is set to run from 30 May to 25 June 1997.

2.6.4. Main objectives for next quarter

These are as follows:

- to see the safe and timely delivery (by end June 1997) of equipment to the Kigoma and Mpulungu project centres
- to have prepared fully for, and executed successfully, the 'Limnological field and laboratory methods training workshop - presently scheduled for the middle two weeks in August 1997; this assumes the successful appointment, and participation of *ca* 5 delegates from each of the four riparian countries.
- to further establish the laboratories, and see the commencement of at least a moderate programme of water quality monitoring.

2.7. Progress Report: June - August 1997 for the Special Study on 'Pollution in International Waters and its Effects on Biodiversity in Lake Tanganyika'

2.7.1. Overall summary of progress

- Visited Zambia and Tanzania and selected national personnel for the Pollution and Sediment Pollution Special Studies. Also publicised the LTBP through talks to schools, fishermen, and fishery, water supply and waste water control personnel.
- Finalised all preparations for forthcoming Technical Steering Committee meeting (Bujumbura) and limnological methods workshop (Kigoma).
- Held meetings on the Pollution Special Study (PSS) requirements for GIS and database facilities

2.7.2. Brief chronology of activities and visits

Visited Zambia (Mpulungu, Kasama, Nsumbu and Lusaka) and Tanzania (Dar es Salaam and Kigoma) 30 May to 29 June: assessed and selected national personnel for the routine monitoring programmes envisaged for the Pollution and Sediment Pollution Special Studies; assessed progress with Mpulungu and Kigoma project centres with special reference to setting up the laboratories; discussed and circulated copies of the Pollution Special Study (PSS) Work Plan; gave talks, seminars and discussions on the PSS - to school children, fishermen, researchers and water supply and waste water treatment personnel; submitted PSS progress report for the quarter March to May 1997 to Dr Menz 1 June 1997.

LTBP Project activities in UK throughout the period under review, preparation of materials (overheads, slides, hand-outs) for forthcoming Technical Steering Committee meeting in Bujumbura and the 'Limnological Field and Methods Training Workshop'; 9 July, submitted to UNOPS, career details and statement to support the appointment of Mr Alex Kirika (IFE, Edinburgh) to the PSS project expressly to help with the organisation of equipment and laboratory facilities in Kigoma and Mpulungu; 15 July attended meeting on harmonisation of Special Study Work Plans - at MRAG, London; 25 July, meeting with Dr Chris Sear at NRI Chatham to discuss the PSS requirements for GIS and database facilities; 12 August, hosted meeting at IFE, Edinburgh to discuss final programme for the limnological methods workshop referred to above; present were Drs Rob Duck (University of Dundee), Chris Foxall (UEA), Tony Bailey-Watts and Mr Alex Kirika (both IFE). 30 August: set off for Burundi (to present the PSS Work Plan to the LTBP Technical Steering Committee) and Tanzania (as trainer on the methods workshop) referred to above.

2.7.3. Current staffing schedule

International

Drs Bailey-Watts and Foxall and Mr Alex Kirika

National

From TAFIRI, Kigoma TZ:

Deonatus Chitamwebwa

Ibrahim Katonda

Edmund Kadula

Dinna Lyoba

Elias Lyoba

Stanslaus Muhoza

Grace Bwathondi

Meshack Kajelelo

From Department of Fisheries, Mpulungu ZM:

Leonard Mwape

Kosam Kaweme

Charles Lukwesa

Isaac Zulu

2.7.4. Main objectives and achievements

These are as follows:

- To see the safe and timely delivery (by end June 1997) of equipment to the Kigoma and Mpulungu project centres; considerable delays encountered, not least due to a fire in Dar es Salaam which resulted in a number of items of project equipment being destroyed. However, equipment destined for the Mpulungu project centre had reached Lusaka before the end of August.
- To have prepared fully for, and executed successfully, the Limnological field and laboratory methods training workshop - presently scheduled for the middle two weeks in August 1997; this assumes the successful appointment, and participation of ca 5 delegates from each of the four riparian countries; preparations were completed but for reasons connected with delays in obtaining travel permits for the delegates chosen for this Workshop, the workshop was re-scheduled for the period 22 September to 3 October.
- To establish the laboratories, and see the commencement of at least a moderate programme of water quality monitoring; delays outlined above have meant that these laboratory and field activities are unlikely to commence until mid-September.

2.7.5. Main objectives for next quarter (September to November 1997)

These are as follows:

- To obtain input from the Francophone project personnel including national coordinators of the major components and approaches proposed in the PSS Work Plan.
- To establish a laboratory in Kigoma which - given reasonable personnel (see below) - can form the base first, for the 2- to 3-week methods workshop, and second, a long-term laboratory environment.
- Through training, to produce as far as possible during the three weeks that Dr Foxall, Mr Kirika and myself are planning to be available to Tanzanians and Zambians at the Kigoma methods workshop referred to above, the following: at least a small corpus of personnel demonstrating a keenness to be involved in, and be capable of, collecting, and analysing chemical and biological samples, and presenting and interpreting the resultant data relevant to aspects of the Special Study on Pollution and some of its effects on the diversity of planktonic and benthic micro-algae.
- To have the appropriate personnel officially appointed to the Project, for periods appropriate to the LTBP tasks that need to be achieved.
- To have presented each appointee with a clear set of standing instructions as regards their initial field and laboratory duties - these instructions being updated as the various skills are mastered and become routine.
- To see Miss Nicola Wiltshire - who has been approved by UNOPS for the post of trainer on the Pollution and Sediment Pollution Special Studies established in the region, initially in Kigoma with the option of moving later to Mpulungu but in any event 'servicing' both centres.