

RESEARCH FOR THE MANAGEMENT
OF THE FISHERIES ON LAKE
TANGANYIKA

GCP/RAF/271/FIN-TD/57 (En)

GCP/RAF/271/FIN-TD/57 (En)

December 1996

REPORT ON FISHERIES MANAGEMENT AND INSTITUTIONS
IN THE COUNTRIES BORDERING LAKE TANGANYIKA

by

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OF THE UNITED NATIONS

Bujumbura, December 1996

The conclusions and recommendations given in this and other reports in the Research for the Management of the Fisheries on the Lake Tanganyika Project series are those considered appropriate at the time of preparation. They may be modified in the light of further knowledge gained at subsequent stages of the Project. The designations employed and the presentation of material in this publication do not imply the expression of any opinion on the part of FAO or FINNIDA concerning the legal status of any country, territory, city or area, or concerning the determination of its frontiers or boundaries.

PREFACE

The Research for the Management of the Fisheries on Lake Tanganyika project (LTR) became fully operational in January 1992. It is executed by the Food and Agriculture Organization of the United Nations (FAO) and funded by the Finnish International Development Agency (FINNIDA) and the Arab Gulf Program for the United Nations Development Organization (AGFUND).

LTR's objective is the determination of the biological basis for fish production on Lake Tanganyika, in order to permit the formulation of a coherent lake-wide fisheries management policy for the four riparian States (Burundi, Tanzania, Zaïre and Zambia).

Particular attention is given to the reinforcement of the skills and physical facilities of the fisheries research units in all four beneficiary countries as well as to the build-up of effective coordination mechanisms to ensure full collaboration between the Governments concerned.

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For both series, reference is further made to the document number **(01)**, and the language in which the document is issued: English **(En)** and/or French **(Fr)**.

For bibliographic purposes this document should be cited as follows:

MAEMBE, T.W., Report on Fisheries Management and Institutions
1996 in the countries bordering Lake Tanganyika.
FAO/FINNIDA Research for the Management of the
Fisheries of Lake Tanganyika.
GCP/RAF/271/FIN-TD/57 (En): 29p.

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This report was prepared during the course of the activity identified on the title page. The conclusions and recommendations given in the report are those considered appropriate at the time of its preparation. They may be modified in the light of further knowledge gained at subsequent stages of the activity.

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SUMMARY OF FINDINGS AND RECOMMENDATIONS

Lake Tanganyika is the largest of the African Rift valley lakes and is the world's second deepest lake. It is shared by Burundi, Tanzania, Zaïre and Zambia. The countries consider the lake and its resources and environment an economic asset which has to be managed sustainably as one ecological unit. The lake provides fish as protein food, employment, income, water supply to the population around the lake, water transport linking the neighbouring states and climate and weather amelioration. Agriculture and fishing form the main occupation of the population around the lake and the catchment area. Mining potential exists in Zaïre and Rukwa Region in Southern Tanzania.

Fishing activity on the lake involves traditional fishing using simple craft and gear, artisanal fishing with the lift net and industrial fishing using purse seining units. The main fish species exploited are the clupeids *Stolothrissa tanganicae* and *Limnothrissa miodon* and their predators: *Lates stappersii*, *Lates mariae*, *Lates microlepis* and *Lates angustifrons*. Industrial fishing is very intense in the Zambia part of the lake and was the same in Burundi leading to decline in catches. High taxes on industrial companies in Burundi has forced most of the industrial boats to stop fishing. Security reasons on the Burundi territorial waters caused stoppage of all fishing activities from March, 1996.

The decline in fish catches could be attributed to a combination of factors ranging from ecological changes, overfishing and other natural causes.

Fisheries Management and Institutions:

Fisheries management in the countries bordering the lake is the responsibility of the Departments of Fisheries. All the countries have Provincial/Regional and District administrative structures. The Provinces, Regions and Districts around the lake in Tanzania, Zaïre and Zambia have personnel dealing with fisheries management, mainly fisheries statistical data collection, extension services and enforcement.

In Burundi, Bujumbura the capital city is close to the shoreline and enables the Department to directly supervise fisheries field activities on the lake without going through the Regional and District hierarchy. Fisheries research on the lake is conducted regionally through the Lake Tanganyika Fisheries Research Project. The project has rehabilitated the national research stations at Kigoma (Tanzania), Uvira (Zaïre) and Mpulungu (Zambia). Substations have been opened at Kipili (Tanzania) to cover the southern part of the lake. Plans to establish a station at Kalemie have to-date not materialized. Zambia has a substation at Nsumbu which is only responsible for fisheries management.

The countries' fisheries management policy is to sustainably manage, develop, and utilize the fish resources to provide food in the context of food security; employment and income. Each country has fisheries legislation and regulations

that guide fishing.

Fisheries Management and Institutions Constraints:

The Fisheries Departments have weak institutional capacity and linkages around the lake which limits their effective management action. In addition, except through the CIFA Subcommittee for Lake Tanganyika meetings and through the regional project, there is no mechanism between the countries to coordinate and enhance cooperation and collaboration in taking management measures around the lake. The other constraints facing fisheries management and Institutions relevant to Lake Tanganyika are:

- i) Inadequate budgetary allocation to the fisheries sector. In some of the countries there is no budget allocation for the sector.
- ii) Inadequately equipped field stations. The Lake Tanganyika Fisheries Research Project has rehabilitated and equipped the Kigoma Tanzania Fisheries Research Institute Centre, Uvira Research Centre in Zaïre, Mpulungu Fisheries Station in Zambia and established its HQ in Bujumbura, Burundi.
- iii) Lack of the capacity to enforce fishing regulations and carry out regular monitoring, control and surveillance. The situation is worsened by the long, inaccessible shoreline and the scattered nature of fish landing sites around the lake.
- (iv) The increasing use of prohibited/destructive fishing methods like beach seines with small mesh size cod end which exploit immature fish and account for the observed local overfishing, and failure in recruitment.
- v) Lack of a regional link between the communities around the lake to facilitate their participation in fisheries management decision making and enforcement.
- vi) Lack of a network to facilitate information exchange around the lake;
- vii) Weak communication links between the field stations around the lake, the fish landing sites scattered around the long shoreline and the administrative capitals except for Burundi where Bujumbura is close to the lake shore.

Priority Areas for Cooperation and Recommendations:

The countries bordering Lake Tanganyika give high priority to cooperation and collaboration in taking measures to wisely manage lake Tanganyika and its resources as one ecological unit by recognizing that fish resources do not recognize the manmade territorial boundaries. The priority areas for cooperation identified in order to meet the countries aspirations include:

- a) Research to establish the state of the fish stocks, their distribution in space and time, suitable fishing techniques; biology of the fish and their habitats; the ecosystem as a whole and interactions, between species and the various trophic levels which should lead to a better understanding of the nature, quality and quantity of the fishery. This will form the scientific basis for taking management measures nationally or regionally to ensure biological and economic sustainability of the fish stocks and the environment. It is recommended therefore that:
- The Research Project GCP/RAF/271/FIN be extended to accomplish the research work initiated in the first phase including a fisheries management master plan.
 - Capacity building be emphasized to further strengthen the research and field stations around the lake to sustain the research achievements.

The management measures expected from research may include:

- Restrictions on the type of fishing gear to be used.
 - Recommendations on imposing closed areas to protect breeding and nursery grounds for fish fry and juveniles and even closed fishing seasons to allow fish growth (recruitment) and breeding.
- (b) Building the capacity at national and regional level in order to undertake:
- (i) Coordination of resource use planning and conservation around the lake.
 - (ii) Collation and dissemination of research and fisheries management and environment conservation information to the scientific community, resource managers, policy makers and fishermen (stake holders). The strategy should involve devising a simple effective system for disseminating research and management information.
 - iii) Formulation of fisheries management policy recommendations to be implemented by the countries nationally or regionally like: control of mesh sizes, closed season, use of acceptable fishing gear.
 - iv) Training of fishermen on fisheries management and conservation to induce co-management. Further, the resources users around the lake must be mobilized and made aware through meetings, workshops and appraisal by the extension staff regarding sound fisheries management.

3. Harmonizing fisheries legislation, statistical data collection and international activities to conserve the lake. This takes recognition of the fact that in a shared water body the fish does not comply to man-made political/ territorial boundaries. The recommended strategy is:

- Calibration and streamlining the existing regulations and different fishing gears used on the lake and adopt those acceptable for use throughout the lake for different fishery.
- Adopt uniform procedures for licensing and penalties for fishing regulations offenses and ensure compliance by all countries.
- Regulate entry into fishing in all countries.
- Standardize statistical data collection and ensure compliance by all countries.
- Enhance conservation of biodiversity under an integrated Lake Tanganyika management scheme by ensuring close cooperation between the Fisheries Research Project and the GEF biodiversity project and any other projects to be implemented on the lake in the future.
- Initiate establishment of a simple mechanism involving the countries that can coordinate cooperation moves independent of the CIFA subcommittee and ensure participation of resource users around the lake. The move should be to establish national working groups with a national coordinator followed by a Regional working group which could at an appropriate time be formalized into an organization replacing the CIFA subcommittee for Lake Tanganyika.

Issues:

The successful implementation of a cooperative programme involving the four countries sharing Lake Tanganyika will depend on:

- peace, stability and continued political good-will among all the countries.
- presence of a strong mechanism to coordinate the initiatives and activities regarding the lake, it's resources and environment.
- adequate funding from Government or other reliable and sustainable sources. Presently all the countries favour cooperation but their limited resources and the many priority national demands do not give room for the countries to allocate sufficient funds to support any agreed cooperative arrangement including the priority projects.

INTRODUCTION AND BACKGROUND INFORMATION

Lake Tanganyika is situated at an attitude of 773 metres and is the world's second deepest. It is shared by Burundi, Tanzania, Zaïre and Zambia. It has a maximum depth of 1470 metres, a mean depth of 570 metres and a volume of 18,800 km³. The water area is 32,900 km² shared as follows: Burundi 2,600 km² (8%); Tanzania 13,500 km² (41%); Zaïre 14,800 km² (45%); and Zambia 2,000 km². It is the largest of the African Rift valley lakes lying between latitudes 3° 29' and 8° 48' south and longitudes 29° 03' to 31° 12' East. The lake is long and narrow with a length of 673 km. and a maximum width of 48 km. The shoreline is recorded to have a length of 1,500 km distributed as follows: Burundi 135 km. (9%); Tanzania 540 km (36%); Zaïre 675 km (45%); and Zambia 150 km (10%). The lake water is permanently stratified with surface temperatures varying between 25°C to 28°C with occasional slight variations. The main inflows are the rivers Rusizi in Burundi and Malagarasi in Tanzania.

The ongoing Lake Tanganyika Fisheries Research Project GCP/RAF/271/FIN has carried out a shoreline survey and come up with a length of 1,838 km apportioned as follows: Burundi 159 km (9%); Tanzania 669 km (36%); Zaïre 195 km (43 %); and Zambia 215 km (12%). The shoreline is characterized by rocks, mixed rock and sand and marshy areas. Burundi has mostly sandy shoreline while in the other countries rocks are most abundant. The shoreline in Burundi is easily accessible served with a good road system. Zambia has a road link with Mpulungu while Tanzania has a railway and a road link with the hinterland from Kigoma. Kalemie has a railway and a road link with Lubumbashi which continues to Kinshasa. The rest of the shoreline is inaccessible by all-year road transport around the lake which deprives fishermen a ready market for fresh fish. It is also difficult for extension staff to carry out enforcement of fishing regulations.

The lake is considered an economic asset as it provides fish as protein food; employment for those involved directly in fishing, fish trade and other fisheries dependent activities, water supply to the population around the lake, water transport linking the neighbouring states and climate and weather amelioration. Agriculture and fishing remain the main stay and indeed the dominant socio-economic activity of most of the population within the catchment area.

Mining potential exists in Zaïre and Rukwa Region in Southern Tanzania. Bujumbura the capital of Burundi is on the shoreline and has substantial industrial development activities. Kigoma in Tanzania, Mpulungu in Zambia, Kalemie and Uvira in Zaïre are other urban centres around the lake that discharge waste products directly or indirectly into the lake.

The fisheries of Lake Tanganyika was historically dominated by clupeids *Stolothrissa tanganicae* and *Limnothrissa miodon* locally referred as dagaa in Tanzania and Kapenta in Zambia, and their predator *Lates* species led by *Lates stappersii*. The clupeids are small pelagic fish species which are characterized by short life span, fast growth and a high natural mortality. *Lates* have in comparison a relatively long life span and low natural mortality. The clupeids once contributed over 70 per cent of the catch but present fishing results especially on the south show a disappearance of the clupeids and higher catches of *Lates stappersii*. The decline in the once abundant clupeids and other fish species could be attributed to a combination of factors ranging from:

- ecological changes.
- predation by *Lates* species and
- overfishing. Burundi and Zambia have over-exploited fish within their territorial waters which has led to lower catches for the industrial fishery and limits its expansion.

The other fish species found on the lake include 3 other *Lates* (unique to Lake Tanganyika), *Labeo*, *Bagrus*, *Hydrocynus*, *Dinotopterus*, *Bathybates*, *Tylochromis* and a variety of ornamental fish(haplochromines).

Fishing is mainly carried out at night with the majority of the fishing methods (lift nets, beach seines, scoop nets) relying on attracting clupeids and their predator to fishing lamps. As a result fishing ceases every month at full moon. The other factors affecting fishing adversely are strong winds and/or rain which restricts light intensity and consequently the fishing gear effectiveness. Three different types of fishery operate on the lake. The industrial fishery was introduced in Burundi by Greek nationals in 1954. A typical industrial fishing unit consists of 16 - 20 metre long steel purse seiner, a fishnet carrying steel boat, 4 - 5 lamp boats and a crew of 30 - 40 fishermen. The ongoing Lake Tanganyika Fisheries Research Project GCP/RAF/271/FIN has carried out a survey and reported in 1994 (Coenen et al. 1994) the distribution of industrial fishing units, as follows:

Burundi 17, Tanzania 7 (3 at Kigoma and 4 at Kirando); 21 in Zaïre distributed between Moba 4 and Kalemie 17; and Zambia 14 all at Mpulungu. Industrial purse seiners mainly capture *Luciolates*.

Artisanal fishery in the northern part of the lake is made up of catamarans or trimarans. Catamarans consist of two mainly wooden boats, 1 - 2 lamps/unit; a liftnet and between 4 - 7 fishermen per catamaran. The liftnet fishery mainly captures clupeids.

Traditional fishery is subsistence fishing using a variety of fishing gear like gillnets, hook and line, long lines, traps and mosquito nets. The sector absorbs a lot of people around the lake. The fishermen use poor craft and gear and are only able to exploit resources close to the shore.

Terms of Reference and Methodology:

The terms of reference are attached as Appendix 1. The Fisheries Management and Institutions Consultant in the company of the legal consultant starting from Dar es Salaam, Tanzania between 6 - 19 July; visited Lusaka (Zambia), Kinshasa (Zaire) and Bujumbura (Burundi) to discuss with fisheries policy makers and administrators with the objective of establishing:

- The institutional arrangements governing fisheries management in the countries and cooperation aspects in place between them as regards lake Tanganyika.
- The priorities considered relevant by each country for fisheries cooperation.
- The institutional arrangements and management capacities required to implement a cooperative fisheries management and development plan.
- The institutional options considered appropriate for Lake Tanganyika cooperation.
- Main constraints likely to effect establishing a strong cooperative mechanism to sustainably manage, develop and utilize the fish resource of lake Tanganyika for social and economic gains of the riparian states.

The report findings are based on interviews with the different people met and reviews of reports made available on the fisheries of Lake Tanganyika by the countries, the Lake Tanganyika Regional Research Project; GCP/RAF/271/FIN headquarters in Bujumbura, Burundi and the GEF Lake Tanganyika Project Director's office in Dar es Salaam. The list of people met is attached as Appendix 2 and the itinerary as Appendix 3.

The consultant concluded the field surveys by visiting the FAO Sub-Regional Office for Eastern and Southern Africa in Harare Zimbabwe to brief the Representation on the findings before returning to Dar es Salaam on 24th July, 1996 to complete the report.

Status of Fisheries Management and Institutions:

Burundi:

Fisheries Management in Burundi territorial waters is vested with the Department of Water, Fisheries and Aquaculture at the time of the visit under the Ministry of Agriculture and Livestock. Three Provinces Bururi, Bujumbura and Makamba border the lake but are not responsible for fisheries matters.

The fisheries Department has stationed field enumerators on 16 selected fish landing beaches where they collect statistical data from the traditional fishing boats and catamarans which must land and sell their fish on the selected beach. The industrial boats have to sell their fish at the central market where fish statistics are recorded and royalty is also collected at the rate of 5 francs per kg. for fresh fish. The beach recorders also act as observers on industrial fishing boats and report on any noncompliance to fishing regulations.

Department staff, when transport is available, visit the fish landing sites to supervise the field enumerators as part of the extension service and advice to fishermen.

The FAO/UNDP Fisheries Statistics and Information Project (BDI/90/002) assisted to upgrade the fisheries statistics collection and reporting system but this cannot be maintained because of lack of funds at the government level.

The fisheries policy is to sustainably exploit the fish resources to provide food, (food security) employment and income. Fishing is regulated by the basic enabling act the 1937 decree which enables the administration to make orders regulating fishing generally throughout the country. Matters relevant to fisheries management contained in the Decree include:

- Collection and analysis of fisheries statistics.
- Fisheries management and planning procedures.
- Licensing and limitation of fishing effort.
- Conservation measures and
- Controls over ecologically dangerous methods of fishing and the introduction of non-indigenous fish species.

Fishing licenses are issued for industrial fishing, artisanal fishing and traditional fishing (individual fishing). In order to protect traditional fishing boats, artisanal fishing occurs beyond 5 km from the shore and industrial fishing 20 km from the shore. Artisanal fishing uses normal catamarans or the more expensive Apollo-unit which uses good equipment, larger canoe plus engine and is more productive.

Fish landing records with the Department show that in 1994 a total of 29,853 tonnes was landed by the different categories distributed as follows: industrial fishing 326 tonnes, ordinary catamaran 24,165 tonnes; Apollo 4,568 tonnes and traditional fishermen (small craft) 795 tonnes. The decrease in catches is due to the insecurity situation on the lake and the high and many fees levied on the industrial boats which has made fishing unprofitable.

The main constraints facing the Department and the fishing industry are:

- Lack of adequate budgetary allocation to support operational activities and the extension services.
- Lack of motivation for the extension and field enumerators.
- High and many taxes payable by the industrial boats has forced 10 boats to remain idle in 1996, 2 have moved to Zambia and only one was fishing up to March, 1996 when fishing on Burundi territorial waters of Lake Tanganyika was closed because of security reasons. The request by industrial boat owners is for the Government to consider reducing the taxes and introducing one type of tax.
- Lack of reliable transport since most of the vehicles are old and have frequent breakdowns.
- High cost of spare parts and fuel makes industrial fishing unprofitable.

Tanzania:

Fisheries management and development in Tanzania is vested with the Fisheries Department of the Ministry of Natural Resources and Tourism with the head office in Dar es Salaam. Administratively Tanzania is divided into regions and districts and Lake Tanganyika territorial waters fall within the boundaries of Kigoma Region in the north bordering Burundi, and Rukwa in the South bordering Zambia. The Director of Fisheries is responsible for fisheries policy formulation and regulates fishing in the regions through Regional fisheries officers, supported by District Fisheries Officers and supporting extension service staff who also carry out enforcement of fisheries regulations and collection of fisheries statistical data. The ongoing Government staff retrenchment exercise has reduced the strength of extension staff, especially in Rukwa Region.

The fisheries policy is to rationally exploit the fishery resources on a sustainable basis with the objective of providing protein food in the context of food self sufficiency (food security); providing employment, income and earning of foreign exchange. Dry clupeids (dagaa) once produced in abundance from Lake Tanganyika is popular and is distributed throughout the country and to neighbouring countries. Ornamental (aquarium) fish export initiated by one company at Kigoma has not performed well due to transportation logistics for live fish from Kigoma.

Fishing on Lake Tanganyika is regulated by the Fisheries Act, 1970 and the principal fisheries regulations which are revised from time to time. The main fishing methods in use are the canoe with a large dipnet (lusenga) and the catamaran using liftnet locally referred to as Kipe. There is limited investment in industrial fishing by purse seining.

Annual fish production from the lake has been declining which could be due to: local overfishing; the limited range of the fishing vessels; poor craft and fishing gear; inaccurate statistical data and fluctuations in *Stolothrissa tanganyicae* and *Lates stappersii* which are the major targeted fish species.

Fisheries research to provide information on the state of the fish resources is the responsibility of Tanzania Fisheries Research Institute which has a centre at Kigoma and has, under the ongoing Lake Tanganyika Research Project GCP/RAF/271/FIN, established a substation at Kipili in Rukwa region. The Kigoma centre and the Kipili substation have been absorbed in the research activities of the regional project.

The FAO/UNDP project (URT/87/016) on strengthening and improving fisheries statistics provided training and equipment to fisheries statistics field enumerators around Lake Tanganyika in Kigoma and Rukwa regions. However, lack of transport, operational funds and retrenchment of the trained staff have affected the quality of data being collected.

The main constraints affecting fisheries management on the lake are:

- Lack of efficient communication system linking fishermen in scattered isolated fishing villages limits the effectiveness of extension and enforcement staff. At the same time fishermen have limited access to a market.
- Inadequate budgetary allocations.
- Inadequate biological information on the state of the fish resources on the lake, their abundance and fluctuation.
- Lack of motivation for the extension and enforcement officers.

- Inadequate funds for research makes the Kigoma research centre dependent on donor funds for the research activities. Under this arrangement research required to support planning for sustainable management and development of the fish resources will not continue in the absence of the Lake Tanganyika Research Project GCP/RAF/27 1/FIN or other donor financed research project.
- Inadequate means of carrying out control and surveillance of fishing activities on the lake and the reported unrecorded fish trade.
- Insecurity situation on the lake where occasionally fishermen are attacked by armed bandits while fishing.

Zaire:

Fisheries Management in Zaire is the responsibility of the National Department for Development of Fisheries "Service National pour le Developpement des pêches") (SENADEP) under the Ministry of Environment, Nature Conservation and Tourism "Ministère de L'Environnement, Conservation de la Nature et Tourisme". The Department with it's headquarters in Kinshasa and acts through the two provinces which share lake Tanganyika to manage the fisheries. The Provinces are in turn subdivided into zones. Moba and Kalemie are the zones in the Southern part while Fizi and Uvira zones are in the north. The main instrument guiding fisheries management is the basic 1937 decree which empowers the fisheries administration to make orders for the protection and management of fisheries throughout the country. Directive (art.5, (e) Min.Decree No.050/44,1961 governs fishing activities on Lake Tanganyika.

The Zairean fisheries policy emphasizes increasing fish production to meet the food needs, and through FAO assistance developed in 1986 a comprehensive action plan to implement the policy but this has not been implemented due to lack of funding and the political instability experienced in 1992 and 1993.

Fish production from Lake Tanganyika is around 35,000 metric tonnes which is low mainly due to:

- Lack of incentives for investment in the sector due to insecurity around the lake. Fish markets are far from the lake.
- High cost of fuel which is purchased from informal sources.
- Lack of spare parts for motorized fishing boats and when available the prices are prohibitively high.
- Lack of fishing gear and when available the prices are prohibitively high.

The National Department for Development of Fisheries is not in a position to implement the fisheries policy and Decree mainly because:

- No recurrent or capital development budget. Consequently the staff around the lake are not motivated and have to finance their report writing from their own sources.
- Statistical data collectors have no training and there is no money for organizing training.
- Inadequate staff.
- Lack of working equipment.
- Salaries are not paid on time.
- The only staff on the shores of Lake Tanganyika dealing with extension service as a subsidiary are at Uvira and have no means to enforce fisheries regulations.
- The extension staff are employed by the zone and are responsible for enforcing legislation of all other sectors. They pay emphasis to collecting of taxes from which they are paid their salaries. The mission was informed that the law requires every fishing boat to have a fishing license but only a few have fishing licenses.

Zaire is a member of the CEGPL (Cooperation amongst the French-speaking Countries of the Great Lakes) including Burundi and Rwanda, which was financed by the Government of Belgium to carry out research in fisheries and water quality in order to provide the basis for sustainable management of the biological resources and the environment of the great lakes. The cooperation initially worked well but has stopped functioning due to the unfavourable political climate being experienced in the area.

Zambia:

Fisheries Management in Zambia is the responsibility of the Department of Fisheries under the Ministry of Agriculture, Food and Fisheries. The Department is headed by a Director of Fisheries. The Department has Provincial Fisheries Development Officers who are in charge of fisheries management matters and report directly to the Director of Fisheries. The Zambia territorial waters of Lake Tanganyika fall within the jurisdiction of the Northern Province Fisheries Development Officer stationed at Mpulungu. The Mpulungu station has a fisheries research unit, a fisheries management unit responsible for enforcement and a fisheries training unit. The other station at Nsumbu has only a Fisheries management responsibilities.

The research unit at Mpulungu has been absorbed in the research activities of Lake Tanganyika Research Fisheries Project GCP/RAF/271/FIN.

Fishing is carried out by traditional fishermen and 10 commercial fishing companies with a total of 17 industrial fishing boats mainly operating from Mpulungu. One company is in the process of establishing itself at Nsumbu. Seven companies have freezing facilities which enables them to supply frozen fish to urban centres out of the lake area and the copper belt.

Fish production from Lake Tanganyika in 1995 amounted to 12,988 metric tonnes as compared to 15,972 metric tonnes produced in 1994. The drop in catch could be due to local overfishing and a decline in fish abundance.

The fisheries policy is to rationally exploit the fisheries resources to provide fish for consumption in the context of food security. Specific policy objectives relevant to Lake Tanganyika fisheries are to:

- Increase fish production
- Improve conservation awareness and ensure that the methods used in fishing are those which conserve the fish stocks.
- Improve the economic status and conditions among small scale fishermen and women, fish farmers, boat builders and fish traders.
- Carry out a programme of applied research and information gathering that will form the basis of fisheries planning and development.

To achieve the objectives the Department of Fisheries has adopted the following strategy:

- To revise and draft a new fisheries legislation.
- To restructure and strengthen the Department of Fisheries.

- To design a research agenda for capture and culture fisheries.
- To establish a project implementation and monitoring unit.

The Fisheries Act No. 21 of 1974 now in the process of being revised is the instrument used by the Director of Fisheries and his staff to regulate fishing activities in the country. The Provincial Fisheries Development Officer and his supporting staff at the District level and fish landing sites, besides carrying out fisheries extension, also ensure the fisheries act and regulations are understood and adhered to by fishermen. The main constraints facing the Department and the fisheries management include:

- Inadequate budget for the Department to enable it perform its regulatory functions, extension service and statistical data collection efficiently.
- The use of unauthorized fishing gear which catch an increasing number of immature fish. The use of beach seines with small mesh size cod ends is a serious problem because it catches juveniles of clupeids together with those of other fish species.
- Inadequate manpower, working tools, transport and other supportive equipment.
- Limited capacity to patrol and enforce the existing legislation.
- Inadequate information on the state of the fish resources, their abundance and causes of fluctuation.
- Lack of fishing gear compels fishermen to use any available means to catch fish.
- Lack of a limit on the number of industrial fishing boats that can be licensed annually increases the pressure on licensing more vessels than the carrying capacity of the resources.

In order to better manage the fish resources under the prevailing situation the policy now is to encourage communities around the lake to take an active part in enforcing the fishing regulation in collaboration with Fisheries extension staff. The comanagement approach will reduce the need to employ a large number of extension staff.

Adequacy of Institutional Arrangements and Management Capacities:

The Institutional arrangement and management capacities existing in each of the countries is weak and need to be strengthened. The following actions are considered desirable:

- Allocation of adequate operational funds for the departments, the regions, the districts and the stations servicing the lake to ensure effective extension service, statistical data collection, enforcement and participation in research.
- Equipping the extension service, statistics, research and enforcement in each of the countries stations around the lake: Bujumbura in Burundi, Kigoma and Kipili in Tanzania, Mpulungu and Nsumbu in Zambia, Kalemie and Uvira in Zaïre.
- Introducing national working groups to ensure participation of the user communities in management decision making.
- Guarantee peace, stability good political will among the countries bordering the lake. Ethnic conflicts experienced in some member countries affect operations on the lake.
- Establishing a simple coordinating mechanism to be supported by the countries that will take up the role of the CIFA Subcommittee for Lake Tanganyika. The existing scarcity of financial resources in the countries indicate that it will take a long time to build up an independent coordinating mechanism. Presently most of the collaborative research, information exchange activities on the lake are donor funded. This situation, unless resolved will mean end of collaboration once donor funding ceases.
- Recruiting adequate trained personnel for the stations dealing with fisheries research, development and management activities on the lake.

Initiatives for cooperation:

The countries sharing Lake Tanganyika have always taken steps to foster cooperation among them to sustainably manage the fish resources of the Lake among other socio-economic, political and cultural issues as shown by the following:

1. Bilateral Joint Permanent Commissions of Cooperation:

The countries have except between Zambia and Burundi bilateral Joint Permanent Commissions of cooperation provided by General Agreements of Economic, Technical, Scientific, Social and Cultural Cooperation. The Commission are at the Foreign Ministry level and are supposed to meet annually and discuss common issues of socio-economic development of their countries. Records show that meetings of the Joint Commissions between Tanzania and Zambia; Tanzania and Zaïre; and Tanzania and Burundi have management of the fisheries of Lake Tanganyika on the agenda and receive through the countries reports of the CIFA Subcommittee for the Management and Development of the fisheries of Lake Tanganyika. The meetings of the commissions have appreciated the good work of the CIFA Subcommittee.

The Joint commission between Tanzania and Zaïre for example has agreed on the following additional issues which are relevant to cooperation in fisheries of Lake Tanganyika:

- Facilitate movement of project equipment and personnel on the lake.
- Ensure conditions of complete security of working personnel on the lake.
- Standardize regulations on fishing on the lake.
- Mobilize funds from external sources to assist fishermen.

The main constraints observed here is that the Joint Commissions have no permanent Secretariat and meet at the initiation of any of the members. While the agreements state clearly they will meet annually for unstated reasons they do not meet frequently.

2. Southern Africa Development Community (SADC):

The Southern Africa Development Community (SADC) was established by Angola, Botswana, Malawi, Lesotho, Swaziland, Zimbabwe, Tanzania, Mozambique, Namibia, South Africa and the new member Mauritius with the main objective of fostering cooperation and economic development between the member countries. SADC has an Inland Fisheries Sector development action plan coordinated by Malawi. Tanzania and Zambia who share Lake Tanganyika are members of SADC but Burundi and Zaïre are not members, which limits cooperation of the four countries to manage the fisheries of Lake Tanganyika under SADC.

3. Preferential Trade Area (PTA) - COMESA:

The four countries sharing Lake Tanganyika are all members of the Preferential Trade Area now changed to Common Market for Eastern and Southern Africa (COMESA). The major objective of COMESA is to promote cooperation in trade and commerce among the member countries. It does not therefore in its present structure and mandate provide a good forum for coordinating the four countries bordering Lake Tanganyika to sustainably manage and develop the fish resources.

4. Committee for Inland Fisheries of Africa (CIFA):

The Committee for Inland Fisheries of Africa (CIFA) exists under the auspices of FAO and following the recommendation of the meeting held in Bujumbura, Burundi in 1977 established a Sub-Committee for the Management and Development of the Fisheries of Lake Tanganyika. The Subcommittee with FAO acting as Secretariat, is the only serious forum for coordinating and fostering cooperation among the countries sharing Lake Tanganyika so as to achieve sustainable management of the fish

resources.

The Subcommittee was instrumental in promoting for donor funding the Lake Tanganyika Fisheries Research Project (GCP/RAF/271/FIN) financed by FINNIDA and executed by FAO. The other achievements of the Subcommittee are:

- Acts as a forum for bringing the countries together to discuss fisheries management and development for Lake Tanganyika. There was no such forum before the Subcommittee existed.
- Identifies priority areas of cooperation. The 3rd and 5th Session of the Subcommittee identified harmonization of fisheries legislation as a key issue for action.
- Collaborates with the Regional Lake Tanganyika Research Project to implement Subcommittee recommendations. For example a seminar for Fisheries statistics coordinators was held in Bujumbura by the Regional Project in 1994 and a Workshop on The Planning and Management of Lake Tanganyika pelagic stocks was also held in Bujumbura in 1995. Subcommittee meetings have stressed the importance of harmonizing fisheries statistical data collection.

The experience is that while the four members of the Subcommittee have expressed their commitment to collaborate and cooperate to manage fisheries of Lake Tanganyika, donor funding has been instrumental in carrying out activities identified for cooperative action like:

- Research on the lake.
- Workshop and seminars.
- Frame surveys; aerial surveys and catch assessment surveys.
- Attendance to meetings of the Subcommittee.

5. Global Environment Facility (GEF) Project:

The project Pollution control and other measures to protect biodiversity in Lake Tanganyika (No. RAF/92/G.32) is financed by the Global Environment Facility executed by UN-Office for Project Services (OPS) and implemented by the Natural Resources Institute of the United Kingdom in association with the Marine Resources Assessment Group, United Kingdom, and the Institute of Freshwater Ecology, United Kingdom. The main objective is to demonstrate an effective regional approach to prevent the loss of the natural biodiversity of Lake Tanganyika with the view to ensure survival of the fresh-water ecosystems.

The project involves many sectors whose activities have a direct on indirect impact on the environment and ecosystem of Lake Tanganyika and in this way will foster close cooperation

between the countries during the life span of the project.

The anticipated benefit to the countries is the establishment of a conservation plan for the lake by:

- providing training and institutional support to enhance local capacities for water pollution monitoring and control and in this way promote greater self reliance in aquatic environment conservation.

The view is that close cooperation and collaboration between the GEF project and the Lake Tanganyika Research project is important and will achieve the following:

- sharing of facilities and equipment to maximize utilization of resources by avoiding duplication.
- build the capacity within the countries so that they can sustain the ongoing research and biodiversity conservation at the end of the projects.
- make full use of national experts in the stations serving the projects around the lake.

Priority Areas for Cooperation in Fisheries:

The priority areas for cooperation in fisheries common to all countries bordering Lake Tanganyika can be summarized as follows:

- a) Fisheries research to establish the resource base for planning and sustainable management and development of the pelagic and demersal fish resources. Fish resources surveys should provide basic information on fish abundance, species composition and distribution, seasonal and spatial variations and the potential yield; causes of fluctuation in clupeids catches. The research information will assist development of conservation guidelines and a fisheries management master plan.
- b) Harmonizing management measures provided for in the legislation of each country. The specific interventions should be to have similar procedures for applying and issuing of fishing licenses in all the countries; standardizing regulations on closed seasons and closed areas, fishing gear mesh sizes and building the capacity of the countries to carry out coordinated enforcement measures.
- c) Standardize the fisheries statistical data collecting systems and establish a data bank to facilitate information exchange between the countries.
- e) Establish a simple mechanism to be supported by the countries to coordinate fisheries management on the lake. The mechanism should ensure community participation by establishing in each country a

national working group that will include resources users on the lake, fisheries policy makers and administrators.

- f) Coordinate and ensure collaboration and complementarity between the GEF project activities and the Lake Tanganyika Fisheries Research Project and other projects to be established on the lake at regional and national level so as to reduce duplication.

Recommendations:

The four countries bordering Lake Tanganyika consider the lake, its resources and environment an economic asset which has to be managed sustainably as one ecological unit. In order to achieve this goal, cooperation and collaboration are considered of highest priority by all the countries. Scarce financial resources do not at the moment provide adequate budgets to support fisheries cooperation in the form of a commission on Lake Tanganyika. In some of the countries there is no budget for the fisheries sector. It is therefore recommended that:

- FAO in collaboration with the countries should ensure the availability of adequate funds from FINNIDA and other donors to continue and complete the good work of the research project. The Code of Conduct for Responsible Fisheries and its associated guidelines should be used for guidance in the implementation of fisheries management measures for the lake, particularly those sections dealing with countries that have shared resources.
- Further assistance be provided to the countries to build up the capacity to jointly deal with fisheries management and development issues on the lake and in particular Implementation of research findings, enforcement of fisheries regulations, standardize, improve and sustain fisheries statistics collection and analysis, exchange of information on fishing trends and human resources development. Governments should pay attention to strengthening the field stations, extension service, enforcement, and motivate fishermen by gradually introducing an effective delivery system to the scattered and isolated fish landing sites.
- Create awareness and community participation in ecosystem management and sustainable exploitation of fish and other resources around the lake. Consideration should be given to establishing national working groups as a way of ensuring resource users can give their views on policy formulation and participate in enforcement of management measures.
- Governments should gradually provide budgetary allocations to support regional cooperation initiatives on the lake in particular implementing the priorities identified for regional action.
- Lake Tanganyika Fisheries Research project should collaborate fully with the GEF project to ensure project components in the basin are implemented to control activities likely to be an environment threat to the

lake. The project should develop and implement an integrated action plan for the management of fisheries in

the lake and the immediate surroundings.

- Countries should gradually build up the experience and capacity to create an organization independent of the CIFA Subcommittee for Lake Tanganyika so as to oversee integrated sustainable fishing and environment management of the lake based on the experience to be gathered from the recently established Lake Victoria Fisheries Organization.
- Capacity building in technical, institutional management and socioeconomic aspects around the lake should be emphasized and strengthened, where practical Non-Government Organisations existing around the lake should be involved in carrying out mass education programmes on resource use and sustainable management.

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TERMS OF REFERENCE

**SAFR/GCP/RAF/271/FIN - LAKE TANGANYIKA - FISHERIES
MANAGEMENT AND INSTITUTION CONSULTANT**

In close collaboration with the FAO Legal Consultant, with the Government Authorities, with the FAO Sub-Regional Office for Southern and Eastern Africa (SAFR) and with the Project Coordinator of GCP/RAF/271/FIN and under the supervision of the FAO International Institutions and Liaison Service (FIPL), the fisheries management consultant will:

- Review the institutional framework governing fisheries and cooperation aspects in fisheries in the countries bordering Lake Tanganyika.
- Identify and prioritize areas for fisheries cooperation.
- Identify and appraise the institutional arrangements and managerial capacities likely to be required for the proper implementation of a cooperative framework.
- Assist the legal consultant in the identification and evaluation of the institutional options for Lake Tanganyika cooperation.
- Prepare a report on the findings, recommendations and conclusions concerning the above points.

The consultant will visit the capitals of the countries bordering Lake Tanganyika: Bujumbura, Dar es Salaam, Lusaka, Kinshasa, as well as FAO HQ, Rome (which was amended on the last minute to read SAFR - Harare briefing/debriefing).

LIST OF PERSONS MET

Burundi:

Mr. J. Tchicaya -	FAO Representative.
Mr. Vitalis Baranyitondye -	Programme Officer.
Dr. George Hanek -	Project Coordinator GCP/RAF/271/FIN
Mr. Pekka Kotilainen -	Limnologist - Project GCP/RAF/271/FIN (Inter-Agency Project component UNTS/RAF/007/GEF).
Mr. Sylvestre Bambara -	Chief Fisheries Officer, Department de la Pêche et de la Pisciculture.
Mr. Boniface Nyakageni -	Counseiller du Department de la Pêche et de la Pisciculture (Advisor Fisheries Department).

Tanzania:

Mr. P. Alleyne -	FAO Representative.
Mr. James Yonazi -	Programme Officer.
Dr. A. Menz -	GEF Project Director
Mr Philippe Cacaud -	Legal Consultant - Team member.

Zambia:

Mr. George K. Mburathi -	FAO Representative.
Mr. Des A. Fortes -	Administrative Officer, FAO.
Mr. Solomon Phiri -	FAO Programme Officer.
Mr. H. G. Mudenda -	Director of Fisheries.
Mr. Cosmas Mumba -	Chief Aquaculturist.
Mr. E. K. W. Chilimuunda -	Chief Training Instructor.
Mr. Douglas Kabakwe -	Acting Provincial

		Fisheries Development Officer - Northern Region.
Dr. Patrick M. Chipungu -		Sustainable Development Advisor - UNDP (United Nations Development Programme).
Mr. Davy Nhata -		National Coordinator - Zambia Forestry Action Programme.
Mr. Lloyd Mposhi -		Programme Officer - Norwegian International Development Agency (NORAD).
Ms. Patricia Daka -		Principal State Attorney - Ministry of Legal Affairs.

Zaire:

Mr. Roberto Ravenna -		FAO Representative.
Mr. Clement Vangu Lutete -		FAO Programme Officer.
Mr. Chris Poppas -		FAO Administrative Officer.
M. Kena Mwauke Benoit -		Secrétaire General, Environnement et Conservation de La Nature.
Mr. Mpiana Kalala -		Directeur du Cabinet du Ministère de l'Environnement, Conservation de la Nature et du Tourism.
Mr. Kalibu Mino Kahozi -		Directeur du SENADEP.
Mr. Makombo Bwanga -		Chief de Division Charge de la Planification et de Aménagement des Pêches (SENADEP).
Mr. Mandy Nekama Seya -		Chief de Bureau Charge de l'Encadrement et de la Vulgarisation des Pêches (SENADEP).

Mr. Malengi-ma-Ntangu	-	Chief de Bureau Charge des statistiques des Pêches.
Mr. Kisilima Katsongo	-	Chief de Division Charge du Contrôle et suivi des Operations de Pêche.

**FAO Sub-Regional Office for Eastern
and Southern Africa, Harare- Zimbabwe:**

Ms. Victoria Sekitoleko	-	FAO Sub-Regional Representative.
Mr. E. Yeboah	-	Programme Officer.
Dr. Kwadwo D. Opare	-	Senior Agricultural Education and Extension Officer.
Mr. T.Y.F. Bitanhirwe	-	Investment Officer. FAO Investment Centre (outposted)

ITINERARY

Date:	Activity:
6/7/1996	Depart Dar es Salaam and arrive in Lusaka.
8/7/1996:	Discussion with the FAO Representation.
	Visit and discussions with the Fisheries Department at Chilanga.
	Document review.
9/7/1996:	Visit and discussions with UNDP Sustainable Development Advisor Norwegian International Development Agency (NORAD);
	Programme Officer, Forestry Action Plan Coordinator and Fisheries Department Acting Provincial Fisheries Development Officer, Northern Region.
	Document review.
10/7/1996:	Visit and discuss with Principal Legal Officer and the Director of Fisheries.
12/7/1996:	Arrive Kinshasa.
	Briefing with FAO Representative.
	Discussions with the Director General and Director of the Cabinet, Ministry of Environment, Nature Conservation and Tourism.
13/7/1996:	Discuss with Directorate of Fisheries officials.
15/7/1996:	Discussions with Directorate of Fisheries.
	Debriefing with Director General and the Director to the Cabinet, Ministry of Environment, Nature Conservation and Tourism.
	Debriefing with FAO Representation.

16/7/1996:	Arrival in Bujumbura.
17/7/1996:	Discussions with the Project Coordinator.
	Review of Project reports.
	Discussions with Chief Fisheries Officer- Department of Fisheries and Aquaculture.
17/7/1996:	Briefing with FAO Representative.
	Debriefing with Project Coordinator.
	Discussions with Directorate of Fisheries and Aquaculture.
18/7/1996:	Review of Project Reports.
20/7/1996 :	Arrival in Harare.
	Briefing with FAO Sub-regional Representative for Eastern and Southern Africa.
	Document review and report writing.
24/7/1996:	Arrival in Dar es Salaam.
25/7/1996:	Discussion with Lake Tanganyika GEF Project Director.
25/7/1996:	Final Report Writing.