

## 2. PROGRAMME DESCRIPTION

2.1 Lake Tanganyika (map, Figure 1; Photo 1) is shared by the four countries of Burundi (8% of surface area), the Democratic Republic of Congo (45%), Tanzania (41%), and Zambia (6%). With an area of 32,900 km<sup>2</sup>, a maximum depth of 1,470m, and a volume of 18,880km<sup>3</sup>, it qualifies simultaneously as: a) the largest of Africa's Great Rift Valley lakes, the second largest of all African lakes (after Lake Victoria), and the fifth largest of the world's lakes; b) the deepest of all African lakes and the second deepest lake in the world; and c) by cubic size, the greatest single reservoir of fresh water on the continent and the second greatest in the world (after Lake Baikal).

2.2 Tanganyika hosts one of the largest inland fisheries in Africa, second only to Lake Victoria in volume of production (FAO 1995a). It therefore represents a significant source of food and livelihood for millions of people dwelling within and around its basin. Some 45,000 fishers were counted around the lakeshore in the mid-1990s (Coenen 1995; Paffen *et al.* 1997), working out of a total of 786 landing sites (example, Photo 2). Such figures immediately direct attention to the important socio-economic role played by the fisheries.

2.3 In addition to its fisherfolk, the lake directly or indirectly provides income, food, drinking water, and a medium a transport and communication for an estimated 10 million inhabitants of its catchment area. Many more millions of people residing within the wider trading orbit of the Tanganyika basin are regular or occasional beneficiaries of its resources as consumers of fishery products.

2.4 Lake Tanganyika is notable in terms of its fauna composition as well. Owing to its geological history as a deep isolated basin formed by rifting that interrupted an ancient east-west river drainage system, of which the present-day in-flowing Malagarasi and out-flowing Lukuga rivers probably constituted the major channels, the lake features a high rate of endemism amongst its aquatic invertebrate populations and both cichlid and non-cichlid fishes (Beadle 1981; Coulter 1991). Tanganyika is well known in the international ornamental fish trade as a source of prized aquarium stock.

2.5 Entrenched within the Western Rift Valley, the lake is cradled between high eastern and western escarpments, and features extensive stretches of unspoilt beaches and rocky promontories, numerous bays, estuaries, and inshore islands. Bordering areas of wetland, forest, and savannah contain a remarkable assemblage of tropical flora, terrestrial fauna, and birdlife.

2.6 Tourist amenities including lodges and beach resorts already exist at various places around the north-eastern, eastern, and south-western shoreline, and more are gradually being developed (example, Photo 3). Several of these facilities trade on the attractions of game parks and reserves adjacent to the lake, such as the Ruzizi delta in Burundi, Nsumbu National Park and Kalambo Falls in Zambia, and Mahale and Gombe National Parks in Tanzania (Photos 4 - 6). Visitor attractions include diving, angling, and other water sports in addition to game viewing safaris.

2.7 The conservation and scenic values of Lake Tanganyika and its littoral zone, and the potential it offers as an 'eco-tourism' destination, are thus also of great significance.

2.8 The protection and sustained use of Tanganyika's multiple assets as a base for livelihood and commerce, a reservoir of biodiversity, and a natural resource and scenic heritage sanctuary are recognised as priorities by the four lacustrine States. At the same time, the lake and its fisheries are seriously threatened by constantly increasing pressure from the

human population inhabiting the littoral and the wider basin, and from unsustainable aquatic and terrestrial resource exploitation practices.

2.9 Implementation of the FFMP through TREFIP would reverse present trends by encouraging sustainable fisheries development, protection of the aquatic environment, and the maintenance of a diverse ecosystem. It would thus ensure that Lake Tanganyika would continue to serve as a major pillar of regional food security and as an international natural heritage sanctuary within the near term and for the sake of future generations.

2.10 TREFIP would direct major emphasis towards improving living conditions of fishing communities around the lakeshore. This will involve partnerships with local residents to undertake actions first to improve performance and management conditions directly within the fishing industry itself, and secondly, on the village level, to improve facilities and amenities that are generally lacking or insufficient. Significant physical, biological, and socio-economic environmental impacts can thus be foreseen.

2.11 This chapter provides a summary of the Programme as formulated by the Feasibility Study Mission, including its background and a review of its major components.

#### ***The Lake Tanganyika Research Project (LTR)***

2.12 Amidst growing concerns over trends threatening the biodiversity and fish stocks of Lake Tanganyika's unique ecosystem, the FAO-executed Lake Tanganyika Research (LTR) Project (GCP/RAF/271/FIN) was established in 1992, with funding primarily from Finland.

2.13 LTR's purpose was to investigate the lake's biological production and fisheries potential, and to devise modalities for the optimal management, on a regional scale, of its fisheries resources to serve present and future human welfare and biological conservation needs.

2.14 The major components of the LTR research programme, conducted in full collaboration with the national fisheries authorities and research institutes of the respective lacustrine States,<sup>5</sup> included hydrodynamics, limnology, fish and zooplankton biology, remote sensing, fish genetics, fisheries statistics, legal-institutional studies, and socio-economics.

#### ***Lake Tanganyika Biodiversity Project (LTBP)***

2.15 Some aspects of LTR research were carried out in conjunction with the Lake Tanganyika Biodiversity Project (LTBP), which was established in 1995 as a five-year project with funding from the UNDP/Global Environmental Facility (GEF). LTBP was completed in July 2000, with the preparation of a Strategic Action Plan (SAP) for the Sustainable Management of Lake Tanganyika and a draft 'Convention on the Sustainable Management of Lake Tanganyika.' The draft Convention now awaits ratification by the four lacustrine States.

2.16 LTBP's remit was to address wider, basin-scale management problems of pollution control, conservation, and the maintenance of biodiversity, thus complementing LTR's more directly fisheries-related investigations.

#### ***Regional Framework Fisheries Management Plan (FFMP)***

---

<sup>5</sup> LTR Headquarters were established on the compound of the Département des Eaux, Pêches et Pisciculture (DEPP) in Bujumbura (Burundi). The national fisheries administration/research stations at Uvira, in the DRC (Centre de Recherche en Hydrobiologie -- CRH), Kigoma, in Tanzania (Tanzania Fisheries Research Institute -- TAFIRI), and Mpulungu, in Zambia (Department of Fisheries -- DoF) have from the outset provided facilities and counterpart staff for the operation of LTR sub-stations around the lake.

2.17 The LTR Fisheries Management Working Group, formed in late 1997, brought together a team of LTR advisors, project associates from the respective national counterpart agencies of the four lacustrine countries as well as the University of Kuopio in Finland, and FAO technical officers from the Fisheries Department (FI) and the Development Law Service (LEGN).

2.18 The group was established in order to facilitate the process of collating and assessing major results of six years of LTR research and, consistent with LTR objectives, to use the resulting synthesis as a comprehensive set of reference points for developing a regional, lake-wide approach to the optimal management of Tanganyika's fishery resources.

2.19 A draft Framework Fisheries Management Plan (FFMP) for Lake Tanganyika, based on principles laid out in the FAO *Code of Conduct for Responsible Fisheries* (CCRF), was developed by the group for consideration by the fisheries authorities of the respective lacustrine States and also for presentation at a series of community meetings convened around the shoreline (example, Photo 7).

2.20 These meetings, completed in late 1998, provided an opportunity to:

- inform lakeshore community residents on the outcomes of major LTR studies;
- demonstrate how these outcomes led to the formulation of the provisional regional management framework; and, simultaneously,
- in keeping with CCRF guidelines, obtain feedback and inputs from local groups in order to strengthen the regional framework.

2.21 Additional actions undertaken by LTR during this period, with the assistance of the FAO FISHCODE Programme (GCP/INT/648/NOR -- Interregional Programme of Assistance to Developing Countries for the Implementation of the Code of Conduct for Responsible Fisheries), included further assessment of legal and institutional provisions necessary to facilitate regional management planning and co-ordination, and the preparation of a detailed workplan for extension of LTR's monitoring activities as a programme to be implemented in future under national execution.

2.22 Results of the Monitoring Programme planning work, the legal-institutional appraisals, and the Community Referenda exercise were taken into account as the FFMP was finalised during technical consultations at FAO headquarters in Rome in late March 1999.

2.23 The updated FFMP and associated reports were presented for deliberation to the 8<sup>th</sup> Session of the CIFA Sub-Committee for Lake Tanganyika held 18-21 May 1999 in Lusaka, and were adopted as presented.

2.24 The Sub-Committee further requested FAO and the LTR team to continue elaborating ideas for an FFMP Implementation Programme and to explore modalities for its execution with the African Development Bank (AfDB).

2.25 The AfDB/FAO/FISHCODE Mission to Lake Tanganyika was subsequently formed and assigned to evaluate earlier proposals drafted under the FAO/LTR Project and the FAO/FISHCODE, and accordingly to develop a comprehensive implementation scheme for the FFMP.

2.26 The Mission was instructed to evaluate LTR/FISHCODE Implementation Programme proposals *in-situ* and elaborate: a) one national project for each participating lacustrine State; and b) one overall project to handle management and co-ordination of all

FFMP Implementation Programme activities on a regional level. The Mission was further instructed to pay special attention to:

- the needs for viable alternative technology and approaches to help ameliorate effects of localised over-fishing and the use of destructive fishing techniques, and post-harvest losses associated with poor infrastructure and lack of marketing opportunities;
- the importance of adhering to the participatory management approach and other principles of the Code of Conduct for Responsible Fisheries, and the need for complementary environmental education and community outreach activities; and
- the particular circumstances, problems, and prospects that exist within each of the national fisheries.

### ***Tanganyika Regional Fisheries Programme (TREFIP)***

2.27 The Tanganyika Regional Fisheries Programme (TREFIP) was thus designed by the Mission as a five-year undertaking to run from 2002 through 2006, with the overall objective of putting the FFMP and its underlying processes into full operation, as endorsed by the CIFA Sub-Committee in May 1999.

2.28 In accordance with the CCRF principles upon which the FFMP is based, TREFIP has strong participatory, developmental, and environmental orientations. Major emphasis is directed towards building partnerships with local fishing community residents in order first to improve performance and management conditions directly within the fishery industry itself, and secondly, on the village level, to improve facilities and amenities that are generally lacking or insufficient.

2.29 Six principal and closely interlinked outputs are anticipated.

2.30 ***Output 1, 'implementation of co-management mechanisms,'*** involves the establishment of pilot Community Fisheries Management Zones (CFMZs) and Local Fisheries Councils (LFCs) through collaboration with NGO agencies involved with village-level outreach programmes related to conservation, agriculture, and community welfare.

2.31 These new modalities of stakeholder participation will operate in conjunction with new forms of license and fish levy revenue allocation to both local groups and official fisheries agencies, and in combination with the establishment of micro-credit schemes, to mobilise and disburse locally needed development and operational funds.

2.32 They will also provide a basis for adapting and putting into effect appropriate measures to control fishing mortality and access to the resource base, and to ensure compliance with these measures.

2.33 ***Output 2, 'creation of improved infrastructure and services,'*** involves actions both at the pilot village level to improve fish processing and handling equipment and techniques as well as social amenities (schools, health services, water supplies, etc.) and at the level of strategic marketing channels to establish or rehabilitate roads, jetties, public markets, fresh fish collection and handling capabilities, and electricity supplies.

2.34 Work will also be carried out in association with this output to construct or upgrade physical plant and technical support facilities at the TREFIP national sub-offices and regional headquarters as necessary to operate the Programme.

2.35 **Output 3, 'protection of stocks and biodiversity,'** involves actions to strengthen and expand fisheries monitoring systems, establish a series of lacustrine protected areas ('no take' reserves), and develop a programme of environmental education in collaboration with local resource users and national fisheries researchers and managers.

2.36 **Output 4, 'improved fisheries legal regimes and monitoring, control, and surveillance capabilities,'** involves work to facilitate harmonisation of fisheries legislative frameworks and elaboration of regulatory measures specific to Lake Tanganyika, including provision for new property rights regimes that would allocate control of access to the community level and for enforcement and compliance assurance mechanisms under local responsibility.

2.37 **Output 5, 'more effective use of scientific advice for management,'** entails actions to revise and expand existing monitoring activities initiated under LTR, strengthen statistical capabilities within national fisheries agencies, and consolidate regional co-operation in statistical information system management.

2.38 **Output 6, 'establishment of a regional fisheries management entity,'** will yield a permanent **'Lake Tanganyika Regional Fisheries Council,'** whose secretariat/executive offices, the Lake Tanganyika Fisheries Centre, will be situated at the former headquarters office of the LTR Project in Bujumbura.

2.39 The Regional Council will eventually serve as the successor agency to the CIFA Sub-Committee, as envisaged in the Sub-Committee's Terms of Reference, and would in future co-ordinate with the Lake Tanganyika Authority, if and when the latter is established under terms of the yet-to-be ratified the Convention drafted under the auspices of LTBP/GEF.

2.40 TREFIP is designed as a set of four country components and a regional level component that together will involve 200 local communities representing around 20,000 fisherfolk families or around 140,000-150, 000 people.

2.41 Total Programme costs are estimated at \$42.2 million, including provisions for physical contingencies (10%) and an inflation factor for both foreign and local currencies (2.5% and 5% respectively). Additional costs of some \$350,000 are estimated for the operation of a six-month Preparatory Phase.

2.42 TREFIP would be funded primarily through loans to the four states, financed by the AfDB, and by grants for technical assistance from the AfDB, GEF, and other interested agencies.

2.43 The TREFIP regional component will be based in Bujumbura. Lakeside Programme sub-offices within the four countries will be located on the premises of fisheries research institutes and Department of Fisheries stations in Bujumbura (Burundi), Uvira (Democratic Republic of Congo), Kigoma (Tanzania), and Mpulungu (Zambia).

2.44 A regional Programme Implementation Unit (PIU) will be headed by a Co-ordinator responsible for overall operations. The Co-ordinator will be assisted by a Socio-economist, a Civil Engineer, a Fishing Technologist, and a Post-harvest Technologist, and by specialist consultants in fisheries legislation, biodiversity, conservation and ecotourism, statistics, community health, and other technical fields.

2.45 A provision of 70 person months of consultant services is made in the Programme budget.

2.46 Local staff will consist of one Programme Assistant recruited from the region, a Monitoring and Evaluation (M&E) specialist, a civil engineer, a fisheries technologist, a marketing specialist, and national consultants in other technical fields.

2.47 A national Deputy Programme Director will head each sub-office, with the assistance of a team of national staff and international associates recruited through the TCDC, UNV, or APO programmes (2 each for DRC, Tanzania, Zambia, and one for Burundi).

2.48 Co-ordination between the PIU and the sub-offices will be maintained through electronic communication, field visits, reporting routines, and annual meetings of Lake Tanganyika National and Regional Fisheries Councils.

2.49 Local NGOs will play a crucial role in Programme activities aimed at establishing Community Fisheries Management Zones and Local Fisheries Councils. Contracting NGOs will in particular be responsible for operation of a TREFIP Micro-Credit Scheme within selected villages, and for community outreach and EE activities.

2.50 A six-month Preparatory Phase is planned to ensure that the legal framework for fisheries co-management arrangements within the four States has been laid, and also to prepare detailed workplans and budgets, recruit local staff and NGO partners, and organise Programme logistics.

2.51 To facilitate timely Programme implementation the Feasibility Study Mission recommended that certain preconditions be met by the four lacustrine States during or before the Preparatory Phase.

2.52 First, legal foundations for CFMZ and LFC arrangements should be elaborated and put in place, as it will otherwise be extremely difficult to implement activities related to proposed co-management measures and the operation of the LFC Micro-Credit Scheme.

2.53 Secondly, provision should be made to ensure that all national fisheries research and administrative stations/offices around the lakeshore are staffed with sufficient personnel of the appropriate calibre to allow effective participation in TREFIP activities.

2.54 Finally, representatives of the relevant funding and executing agencies should as soon as possible investigate appropriate modalities of technical and financial co-operation that could be established under a possible Lake Tanganyika Authority (proposed under the draft LTBP/GEF Lake Tanganyika Convention and the Regional Fisheries Management Council to be established under TREFIP).