

**Report of the**

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**AD HOC TECHNICAL CONSULTATION ON THE DEVELOPMENT AND  
MANAGEMENT OF THE FISHERIES OF LAKE KARIBA**

**Siavonga, Republic of Zambia, 19–20 November 2002**



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## **PREPARATION OF THIS REPORT**

This is the report of the Ad Hoc Technical Consultation on the Development and Management of the Fisheries of Lake Kariba held in Siavonga, Republic of Zambia, from 19 to 20 November 2002.

### **Distribution:**

CIFA Members

Participants in the Technical Consultation

Other interested nations and international organizations

FAO Fisheries Department

Fisheries Officers in FAO Regional and Subregional Offices

FAO Subregional Office for Southern and East Africa.  
Report of the Ad Hoc Technical Consultation on the Development and  
Management of the Fisheries of Lake Kariba. Siavonga, Republic of Zambia,  
19–20 November 2002.  
*FAO Fisheries Report*. No. 720. Rome, FAO. 2004. 18p.

**ABSTRACT**

This document is the final report of the Ad Hoc Technical Consultation on the Development and Management of the Fisheries of Lake Kariba. The major topics discussed were: current status of the fisheries in the Lake Kariba national sectors; legislations, restrictions, monitoring, control and surveillance; and fisheries management and environmental degradation issues. The summary of the main recommendations and decisions is shown in Appendix E.

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## **OPENING CEREMONY**

1. The Technical Consultation was officially opened Mr Timothy Hanseluka, Council Secretary of Siavonga. He welcomed the delegates from Zimbabwe, Zambia, the Food and Agriculture Organization of the United Nations (FAO) and also Professor Jeppe Kolding from the University of Bergen in Norway. The Council Secretary noted that this Consultation was very important for the two countries sharing the Lake. He emphasized the fact that the fish moves across the border and the fishermen are mobile hence it was necessary for the two countries to discuss common management problems for the benefit of the riparian populations. The list of participants is given in Appendix B.

2. The Council Secretary thanked FAO Subregional Office for Southern and East Africa for assisting Zambia and Zimbabwe in organizing the meeting. He recognized the presence of Alhaji Jallow from the FAO Regional Office for Africa, Accra, Ghana at the meeting. He also recognized the participation of Professor Jeppe Kolding from the University of Bergen who has worked on the Lake during the last decade. He noted that the presence of the fishers' Representative in Siavonga is in recognition of the importance of stakeholders (fishers) in the management of the fisheries of Lake Kariba. The Siavonga Council Secretary wished the delegates success in their deliberations.

3. Mr Aubrey Harris on behalf of Ms Victoria Sekitoleko, the FAO Subregional Representative for Southern and East Africa, reciprocated thanks to the Council Secretary for accepting to officially open the meeting. It was pointed out that FAO attaches importance to the Lake Kariba, which is a source of food security for the people of the riparian countries of the Lake. Additionally Alhaji Jallow, Senior Fisheries Officer in Accra, Ghana informed the delegates that this Consultation was a result of the recommendation at the last FAO Committee for Inland Fisheries of Africa (CIFA) meeting held in Abuja, Nigeria, which requested FAO to assist the two countries in the management of Lake Kariba.

## **ADMINISTRATIVE ARRANGEMENTS**

4. The FAO Secretariat outlined the administration arrangements for the meeting; and highlighted the importance of the Consultation in formulating the recommendation for sustainable development and management of the fisheries of Lake Kariba.

## **ADOPTION OF THE AGENDA AND ARRANGEMENTS FOR THE SESSION**

5. The agenda for the Technical Consultation was adopted and is shown in Appendix A. The documents placed before the Ad Hoc Technical Consultation are listed in Appendix C.

## **ELECTION OF CHAIRPERSON AND VICE-CHAIRPERSON**

6. Mr Charles Maguswi, Deputy Director of Fisheries in the Ministry of Agriculture and Cooperatives of Zambia was elected Chairperson and Ms Rachel Gawain, Acting Chief Ecologist, Department of National Parks of the Ministry of Environment and Tourism, Zimbabwe was elected Vice-Chairperson.

## **ELECTION OF RAPORTEURS**

7. Mr Patrick Ngalande of the Fisheries Department in Zambia and Mr Wilson Mhlanga, Officer-in-Charge of Lake Kariba Fisheries Research Station, Zimbabwe, were elected as Rapporteurs.

## **CURRENT STATUS OF FISHERIES IN THE LAKE KARIBA NATIONAL SECTORS**

8. Both Zambia and Zimbabwe presented papers describing the current status of fisheries in their national sectors. It was pointed out that the available fish stocks, for both the pelagic kapenta (*Limnothrissa miodon*) and the artisanal inshore stocks have been fluctuating for the last decade. There are indications of declining catches although there is no evidence of biological overfishing.

9. The Technical Consultation was informed that Zambia has two important fisheries on Lake Kariba, namely, the industrial – kapenta fishery and the artisanal gillnet fishery.

10. It was pointed out that Zambian fish production has fluctuated between 6 000 and 7 000 tonnes over the last ten years. According to the results of the Zambia/Zimbabwe the Southern Development Community (SADC) Fisheries Project supported by the Norwegian Agency for Development Co-operation (NORAD) and the Danish International Development Assistance (DANIDA), the standing biomass of the kapenta stock was estimated to be between 15 000 and 20 000 tonnes during the period 1992-98. The following activities were carried out:

- Biological studies carried out on the kapenta under the Project.
- Parameters of growth and mortality estimated.
- Bio-economic assessment of the stock.
- The studies on the kapenta fishery indicate that economic factors will limit further expansion of fishing effort.

11. The Zambian delegation informed the meeting that the following activities need to be carried out in future:

- collection of economic data from the kapenta fishery;
- analysing by the working group economic data;
- recommendations on levels of effort that achieve maximum economic rent for the fishery.

12. Concerning the management of the kapenta fishery, a Protocol Agreement has been signed between Zambia and Zimbabwe. What remains is to implement the Joint Fishery Management Committee and the Joint Fishery Technical Committee.

13. It was reported that Zambia is implementing the collection of statistics on the Kapenta fishery with the collaboration of the kapenta operators. Fisheries information is also collected on the artisanal gillnet fishery. The production of the artisanal sector is estimated between 1 500 and 3 000 tonnes. The artisanal fishery supports more than 2 000 fishers, catching mainly the white breasted bream and the red breast bream as well as tiger fish and bottle fish.

14. The meeting was informed that Germany Agency for Technical Co-operation GTZ promoted better preservation techniques using smoking kilns as well as brining. Fishers prefer smoking to brining.

15. The delegates were informed that the *Limnothrissa miodon* (kapenta) has remained the common species occupying the pelagic niche. There has been a decline of kapenta catches from 19 232 tonnes in 1993 to 9 826 tonnes in 2001. Factors that could have led to this perceived decline included unscrupulous fishing practices, use of nets with smaller meshes of less than 10 mm, fishing in prohibited areas (shallow waters), as well as a possible increase in fishing effort .

16. It was pointed out by Zimbabwe that the data collection by fishers fits very well within the co-management framework. The approach however had to provide incentives for the data collectors. Commercial returns for the kapenta industry were collected on a monthly basis. Kapenta constitutes 93 percent of the total fish catches in the lake.

17. The Consultation was informed that *Oreochromis mortimeri* which is endemic to Lake Kariba dominates the species composition of the catches for 2001 in the inshore sector. About 38 percent of the fish catch was *O. mortimeri*, and 23 percent of the catch was the tiger fish *Hydrocynus vittatus*. More than forty fish other fish species are caught in Lake Kariba. Some are not caught in the gillnets because of mesh size restrictions. These species include the *Bracinus imberi*, *Barbus malaquensis*, etc. The four types of tilapia caught on Lake Kariba are *Tilapia rendalli*, *O. andersonii* and *Oreochromis mortimeri* and *Oreochromis niloticus*.

18. The Meeting noted that the current project activities in Zimbabwe consist of the following:

- environment monitoring of cage culture impact;
- lakeside gillnet programme;
- length-frequency data collection

19. The Meeting was informed that Zimbabwe had initiated the collection of biological and socio-economic data through the following surveys:

- frame surveys in the inshore fisheries sector;
- fishing surveys to ascertain the number of fishing units on the Lake, obtain qualitative data about the attributes and character of fishing units on the lake, and inspect the fishing gear to determine if they conform to regulations.

20. The Technical Consultation took note of the measures taken by Zimbabwe to strengthen institutional capacity building of the artisanal fisheries sector.

21. This paper highlighted the current difficulties being faced in assisting the artisanal fisheries sector and brought out the role played by governmental, intergovernmental and non-governmental organizations in reducing the difficulties encountered by fishers in accessing loans due to absence of collateral. Among other issues the following constraints were raised:

- inadequate human resources;
- inadequate land and water transport;
- limited appreciation of co-management;
- inadequate financial capacity; and
- limited social infrastructure for schools, markets, and fish processing and distribution.

22. The paper summarized the achievements of the NORAD funded research project over the last decade and also pointed out the need to put more emphasis on management and development of the inshore fishery. Trends in the catches of both industrial and artisanal sectors were presented and the effort which has gone into introducing community-based management was described.

23. An important point which came up during discussions was that the two governments will be required to provide more funds to sustain the initiations which were started in the project as the donor funding is now coming to an end.

24. The paper also discussed the difficulties being faced by the artisanal fishers, from losses, and access to capital.

25. The perception that the inshore fishery stock is considered to be localized and separate was questioned. The need for verification of this concept was highlighted. The role of women in the fishery was discussed, their low participation in the actual fishing operations was reflected and a call for redressing the situation was made.

26. Two papers on legislation, restrictions, monitoring control and surveillance on the Zambian and Zimbabwean part of the lake were presented and discussed, focused on the legal instruments used on both sides to control the level of fishing and environmental degradation.

## **LEGISLATION, RESTRICTIONS, MONITORING, CONTROL AND SURVEILLANCE**

27. The Zambian delegation informed the meeting that legislation, restrictions and by-laws exist in Zambia but the government lacks the means for enforcing these restrictions. There are external factors, which affect the Fisheries Department such as external funding.

28. The meeting noted that there are problems in implementing monitoring, control and surveillance (MCS) because of lack of sufficient funds and human resources such as:

- lack of operational funds;
- shortage of adequately trained staff;
- non-functional organization structure.

29. Current fishery legislation in Zambia does not conform to present ideals of involving communities in the management of the natural resources. It is very old, outdated and inappropriate for the management and development of fisheries in the current environment. The new draft fisheries bill took into account several factors and aims at including the following aspects in the fisheries legislation of Zambia. There is a need to decentralize and devolve fishery management responsibilities to local communities in the fishery areas; to facilitate participation of local communities and fishermen in the formulation and

enforcement of fishery management regulations; to include several aspects of aquaculture development in the fisheries legislation; and to conserve aquatic habitat and fauna as well as to facilitate approved management and conservation structures and measures.

30. Zimbabwe is implementing legislation, fishery restriction, monitoring control and surveillance programme. There are financial and human resource constraints, which limit the success of operations and compliance by the fishermen. It was noted that poaching is still taking place in form of fishing in prohibited areas.

31. The Zimbabwe delegation outlined the specific legislation and national by-laws for Lake Kariba. These include:

- The Parks and Wildlife Act 20:14 and subsequent Statutory Instruments (SI).
- The twenty conditions outlined on the permit for kapenta finishing.
- The Inland Water Shipment Act.
- The Water Act and the Zambezi River Authority Act.

32. The Technical Consultation was informed of existing protocols between Zambia and Zimbabwe, which include:

- Zambia/Zimbabwe SADC Protocol;
- Zambia/Zimbabwe Permanent Joint Commission.

33. The Technical Consultation noted that these protocols facilitate discussion of relevant fisheries matters common to Zambia and Zimbabwe. These protocols also provide a platform for assessing, initiating and promoting research and development activities, essential for optimum management of kapenta as well as the inshore fish stocks.

34. The Representative of fishers in the Zambian sector outlined the problems faced by artisanal fishers on the Lake and suggested ways in which the government could assist their fishing activities. The problems outlined include the following:

- difficulties in purchase of fishing nets, fibre boats, ropes and twines;
- lack of social facilities and amenities such as schools, clean drinking water and health services;
- problems of water and land transport;
- Illegal fishing practices;
- inadequate control of number of fishermen;
- lack of electrification of rural areas;
- lack of credit facilities to fishers; and
- discrimination of fishers vis-à-vis farmers.

35. The Technical Consultation was informed by the fishers about conflicts with other users of the Lake namely the kapenta industrial fishery. The following requests were made:

- loans for fishing equipment and boats;
- boreholes for drinking water;
- technical advice from Fisheries Department and researchers;
- improvement of road transport;

- gazetting of fishing villages;
- breeding areas.

36. The Technical Consultation took note of the needs of the fishers, which had to be included in the report for the attention of fisheries Administrators in both countries.

### **AN OVERVIEW OF FISHERIES MANAGEMENT AND ENVIRONMENTAL DEGRADATION ISSUES**

37. This paper was presented by the FAO secretariat. It addressed pollution and environmental degradation and the presence of heavy metals in the lake and control of aquatic weeds.

38. It mentioned the objectives for the conservation of the lake ecosystem, objectives for coordinated fisheries research, integrated fisheries management and information generation, flow and exchange. The options for national management of the shared fisheries were highlighted.

39. The Technical Consultation noted that the issues raised in this paper could be utilized as a framework in formulating recommendations on various aspects of the fisheries and environmental concerns on Lake Kariba.

### **RECOMMENDATIONS MADE AT THE TECHNICAL CONSULTATION**

40. The Technical Consultation recognized the status of pelagic and inshore artisanal fish stocks. It was noted that there exists data of more than 20 years around the Lake. However, there is need for the two countries to improve biological statistical data collection on fish stocks. The Technical Consultation made the following short-term and long-term recommendations.

41. It was recommended that the fisheries administration of the two countries fulfil the following:

- Compile and standardize historical data.
- Continue the production of joint fishery statistical reports.
- Assess the economics of the kapenta fishery.
- Organize a JFTC Meeting /Workshop.

42. The delegates recommended support for the following

- Setting up a socio-economic data collecting system for the artisanal inshore fishery in the short-term.
- Improve socio-economic data collection capacity in the longer term.

43. The Technical Consultation recognized the importance of extension services and information dissemination. The delegates recommended that the extension and information delivery service be strengthened by the national administrations.

44. Concerning fish processing and marketing it was recommended that both countries carry out the following:

- Support the introduction of appropriate fish processing and storage techniques in the short-term.
- Support village infrastructure development to improve fish preservation and access to market outlets over the long-term.

45. The Technical Consultation noted the presence of existing research information collected for the last decade which can be utilized for management purposes, these include:

- Old time series data, which was partly captured in the database, have been revised, updated and standardized in a unified system. The database needs to be updated by entering the remaining data.
- Reviews of previous biological reference points and management regulations including MSY and optimal effort.

46. The Technical Consultation was informed of the outstanding research needs, viz. the pelagic fishery (kapenta):

- Need to determine the productivity level - or P/B ratio - of *Limnothrissa miodon*.
- Need to assess the economics of the kapenta fishery and the inshore (artisanal) fishery.
- Need to assess the inshore stocks using multispecies and multigear methods.

47. The Technical Consultation noted the information and research needs for developing, adoption and strengthening of joint fisheries management systems and activities. These include:

- strengthen the Joint Fisheries Technical Committee;
- strengthen the unified data collection and storage system;
- strengthen routine monitoring;
- enhance institutional research capacity;
- develop relevant research programmes to address outstanding management issues;
- disseminate results for public utilization.

48. There is evidence of high post-harvest losses in the inshore fishery of Lake Kariba which is due to inappropriate processing methods, inadequate financial resources and shortage of fuel wood. It is therefore recommended that appropriate innovative fish processing technologies be introduced and encouraged in the Lake Kariba fishery.

49. It was also noted that most of the fishing villages in Lake Kariba are situated in remote areas which are highly inaccessible by most major communication means. This situation has already affected the timely marketing and disposal of the fishers catch. The introduction of storage facilities such as freezers has been hindered by the absence of electricity in these areas. The situation is further aggravated during the rainy season.

50. It is therefore recommended that infrastructure be provided in the fishing villages as part of the social development programmes.
51. It is observed that there is limited participation of women in the fishing around Lake Kariba but women are more involved in fish trading. It is therefore recommended that the participation of women in the fishing industry be encouraged and strengthened.
52. The Technical Consultation recognized the need for environmental management around the Lake. The potential for increased environmental degradation and pollution in Lake Kariba due to expansion in human activities in the catchment area of the lake as well as activities in the lake itself was noted.
53. The Meeting recognized the need for environmental monitoring and urged national fisheries authorities to make the relevant institutions aware of the effects of pollution, heavy metals and environmental effects on fisheries and fishers.
54. It is therefore recommended that the national fisheries authorities urged that sources of pollution in the lake be identified and a regular integrated environmental management programme be instituted.
55. It was noted that one major factor that has hindered development in the artisanal fishery is lack of credit to fishers. The delegates also noted that small-scale farmers in the crop production sector are provided with credit facilities. It was recommended that the two national administrations identify viable credit systems in fishing communities
56. The Technical Consultation emphasized the importance of sustainable management and recommended to the riparian countries to review co-management processes around the Lake. There was also a need for the Joint Fisheries Management Committee to be convened.
57. The meeting noted that in some SADC countries fisheries is a stand-alone department, while in other countries the fisheries portfolio has been amalgamated with other government departments such as agriculture and wildlife. Such latter arrangements can lead to the marginalization of fisheries research activities and fisheries institutions in some countries despite the fact that fisheries make significant contribution to their economies.
58. Decision-makers may not always be aware of the significance of the fisheries sector in national economics and the activities that should be undertaken to support and help sustain the sector.
59. In view of the importance of Lake Kariba and other inland water bodies to the food security of the region the meeting felt that it was important that due recognition of fisheries be given in structural changes so as to support and strengthen the fisheries sector. This opportunity should be seized by both States sharing the resources of Lake Kariba in the structural changes that currently taking place. Otherwise the potential increased benefits from the joint management of the Lake will be lost.



**ANY OTHER MATTERS**

60. The Meeting invited the two riparian governments to follow-up on the various issues identified in this report and take the necessary measures to implement the recommendations made.

**ACKNOWLEDGEMENT**

61. The delegates commended FAO for the assistance in organizing this Consultation and wished, if possible with similar assistance, another consultation be held in the year 2004.

**DATE AND PLACE OF THE NEXT AD HOC CONSULTATION**

62. It was agreed that the next technical fisheries consultation be held in the year 2004 in Kariba, Zimbabwe. The exact date of the meeting will be determined by FAO after consulting the host Government of the Republic of Zimbabwe.

**ADOPTION OF THE REPORT AND RECOMMENDATIONS**

63. This report with its recommendations was adopted at Siavonga on 20 November 2002.



## **APPENDIX A**

### **Agenda**

1. Opening of the session
2. Administrative arrangements
3. Adoption of the agenda and arrangements for the session
4. Election of the Chairperson and Vice-Chairperson
5. Current Status of fisheries in the Lake Kariba national sectors
6. Legislation, restrictions, monitoring control and surveillance
7. An overview of fisheries management and environmental degradation issues
8. Recommendation made at the Technical Consultation
9. Any other matters
10. Acknowledgments
11. Date and place of the next ad hoc consultation
12. Adoption of the report and recommendations



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**APPENDIX C****List of documents****Session Documents**

CIFA:DM/LK/03/1	Provisional Agenda and Timetable
CIFA:DM/LK/03/2	Status of Fisheries in the Zambian Sector of Lake Kariba
CIFA:DM/LK/03/3	Status of Fisheries in the Zimbabwe Sector of Lake Kariba
CIFA:DM/LK/03/4	Legislation, Restrictions, Monitoring Control and Surveillance in Zambia
CIFA:DM/LK/03/5	Legislation, Restrictions, Monitoring, Control and Surveillance in Zimbabwe
CIFA:DM/LK/03/6	An overview of Fisheries Management and Environmental Degradation





## APPENDIX D

### Summary of major decisions and recommendations

#### For the attention of Governments

#### Current status of the fisheries of Lake Kariba national sectors

#### Short-term recommendations on status of stock

1. To compile and standardize historical data.
2. To continue the production of joint fishery statistical reports.
3. To assess the economics of the kapenta fishery.
4. To organize a JFTC Meeting /Workshop.

#### Fishery statistics and socio-economic data

- To set up a socio-economic data collecting system for the artisanal inshore fishery in the short-term.
- To improve socio-economic data collection capacity in the longer term.

#### Extension/information dissemination

1. To strengthen the extension and information delivery services.

#### Fish processing and marketing

1. To strengthen and support the introduction of appropriate fish processing and storage techniques in the short-term.
2. To support village infrastructure development and to improve fish preservation and access to market outlets over the long-term.

#### Fisheries research use and needs

1. To update and standardize the old time series data and to enter the remaining data.
2. To review previous biological reference points and management regulations including MSY and optimal effort.
3. To determine the productivity level - or P/B ratio - of *Limnothrissa miodon*.
4. To assess the economics of the kapenta fishery and the inshore (artisanal) fishery.
5. To assess also the inshore stocks using multi-species and multi-gears methods.

#### Outstanding research activities

1. To strengthen the Joint Fisheries Technical Committee.
2. To strengthen the unified data collection and storage system.
3. To strengthen routine monitoring.

4. To enhance institutional research capacity.
5. To develop relevant research programmers to address outstanding management issues.
6. To disseminate results for public utilization.

#### **Post-harvest processing and community support**

1. To introduce and encourage appropriate innovative fish processing technologies;
2. To provide appropriate infrastructure in fishing villages as part of the social development programmers.

#### **The role of women in Lake Kariba fisheries**

1. To encourage and strengthen participation of women in the fishing industry.

#### **Integrated environmental management programme of Lake Kariba**

1. To identify, institute and monitor regular integrated environmental management programmers.

#### **Resource and credit assistance for fishers**

1. To identify viable credit systems in fishing communities for the two riparian countries.

#### **Fisheries Co-management**

1. To review co-management processes around the Lake and to convene the Joint Fisheries Management Committee to be convened.

#### **Infrastructure**

1. To sensitize the public, policy makers and decision makers and the politicians about the economic and nutritional importance of Lake Kariba as a source of animal fish protein as well as an asset for food security for both Zambia and Zimbabwe.

#### **Any other matters**

1. To take follow-up action on the various issues identified in this report and to implement the decisions and recommendations made.

#### **For the attention of FAO**

1. To assist in organizing a second technical consultation on Lake Kariba in 2004.

**This document is the final report of the Ad Hoc Technical Consultation on the Development and Management of the Fisheries of Lake Kariba, held in Siavonga, Republic of Zambia, from 19 to 20 November 2002. The major topics discussed were current status of the fisheries in the Lake Kariba national sectors; legislations, restrictions, monitoring, control and surveillance; and fisheries management and environmental degradation issues. The summary of the main recommendations and decisions is shown in Appendix E.**

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