FINAL REPORT

EXTERNAL EVALUATION
of the
Research, Monitoring and Development Project of Fisheries in the Cahora Bassa Reservoir – Phase II
2007-2010

iceida ICELANDIC INTERNATIONAL DEVELOPMENT AGENCY
ÞRÓUNARSAMVINNUSTOFNUN ÍSLANDS

Republic of Mozambique
Ministry of Fisheries

JUNE, 2010

EXECUTIVE SUMMARY

I. INTRODUCTION

The **Research, Monitoring and Development Project of the Fisheries in the Cahora Bassa Reservoir – Phase II** (a.k.a., Phase II or Project in this Evaluation) is a collaborative effort between ICEIDA and the Ministério das Pescas (MP, or Ministry of Fisheries) of the Government of Mozambique (GoM). Within MP, the Instituto Nacional de Investigação Pesqueira (IIP) is the implementing institution and is responsible for promoting scientific management of fisheries resources in Mozambican waters. ICEIDA commissioned an independent Evaluation of the Phase II Project in June 2010. This report presents the findings of the Evaluation Team.

The Phase II Project was formulated in 2006 and implemented in 2007 as a complementary continuation of the very successful Phase **I**, conducted 2003–2005 that principally concerned the kapenta fishery and capacity development at Cahora Bassa.

The objective of Phase II was stated as: *The Project is a research-based project aimed at producing management options for the three fisheries, the semi-industrial, the Artisanal and the sport fisheries on the Cahora Bassa reservoir with the objective of minimizing fisher conflict and at the same time optimizing the harvest from Cahora Bassa.*

The specific objectives were defined in the Project Document (PD) as:

1. *Strengthening the infrastructure and research facilities of the IIP delegation in Songo;*
2. *Building human capacity by creating a conductive environment for established researchers to conduct their work and by training Mozambique Researchers to MSc and PhD level;*
3. *Conducting research and monitoring activities on the existing fisheries (semi industrial Kapenta, Artisanal and sport fisheries) in order to provide the information necessary for the development of holistic management strategies/plans for the lakes fisheries; and*
4. *Developing management strategies/plans for the major fisheries on the lake.*

The expected outputs of Phase II

1. *Infrastructure to be built in Songo;*
2. *Human capacity would be enhanced by*
    a. *One MSc and one PhD graduate from Mozambique by project end,*
    b. *PhD thesis on bio-economy assessment of kapenta fishery, and*
    c. *MSc thesis on the physical, chemical and biological properties of the lake;*
3. *Research reports*
    a. *Fish biodiversity report,*
    b. *GIS maps of vulnerable areas along the lake,*

c. *Report on the distribution, population dynamics and biology for the main species exploited by the artisanal fishery,*
d. *Proposal for close areas,*
e. *Report on distribution and abundance and population dynamics for the exploited species,*
f. *Stock assessment report on exploited species with management recommendations,*
g. *Report on bio-economy assessment of kapenta fishery,*
h. *Report on physical, chemical and biological properties, and*
i. *Report on the potential and sustainable yields for the artisanal and kapenta fisheries, based on stock assessments;*

4. *Fisheries monitoring system established*
   a. *Maps of fishing areas for the various kapenta operators and fishing villages, and*
   b. *Catch and effort reports for all sectors are available by June each year;*
5. *Management Strategies/Plans*
   a. *Management strategy/Plan for the Kapenta fishery,*
   b. *Management strategy/Plan for the artisanal fishery, and*
   c. *Management strategy/Plan for the sport fishery;*
6. *Other*
   a. *Existence of fishing associations and co-management groups, and*
   b. *Increased awareness on HIV/AIDS among the fishing community.*

II. EVALUATION PROCESS

The Terms of Reference (TOR) for the Evaluation Team were as follows: *The main objective of the analysis is to evaluate the outcome and impact (if possible) of the Project and examine the effects on the fisheries sector, communities, institutions and fisheries resources in Mozambique.... The evaluation shall be limited to activities financed by ICEIDA and cover the period from 2007 to the present.*

Following the Organisation for Economic & Co-operation Development (OECD) Development Assistance Committee (DAC) Evaluation Quality Standards, the Evaluation Team was expected to review the:

- **Relevance of the Project** in relation to:
  - Partners policy goals concerning poverty alleviation,
  - Mozambique needs as expressed in national fisheries policies and strategies, and
  - Cross-cutting issues related to environmental sustainability and gender as stated in the Partners policies.
- **Efficiency**. Assessment of the use of financial and human resources available to the Project. Of importance in this context is also to examine the coherence and complementarily between different projects and programs, and also coherence with other Icelandic or international development assistance programs in the Mozambique.

- **Effectiveness**. Examining the extent to which the Project's objectives were achieved, or are expected to be achieved, taking into account their relative importance.
- **Sustainability.** Assessing if net benefits are likely to continue after the completion of the assistance. Sustainability of the institutions was to be developed under the Project.

The Evaluation included

1. A reiew of the Project Document (PD) as well as other implementation and technical reports, progress reports, final reports, stakeholder reports, minutes of meetings, and other written communications;
2. Interviews with representatives of the MP and more specifically the IIP and FFP; Tete Provincial Fisheries Officer; IIP delegate and Research Coordinator at Cahora Bassa; representatives of the Cahora Bassa Kapenta Fisheries Organization; Royal Norwegian Embassy (Norway); current ICEIDA Country Director (CD) and Fisheries Project Manager; and past and current post-graduate (MSc & PhD) students (Appendix I);
3. A visit and on-site inspection of the IIP facilities at Songo;
4. A field reconnaissance of the lower lake to better understand the three fishing sectors; and
5. Other materials obtained during the Evaluation.

III. EVALUATION FINDINGS

A. OVERVIEW

ICEIDA's cooperation with MP on the Cahora Bassa has been both meritorious and historic. Indeed, the very presence of the IIP on the Cahora Bassa is linked directly to ICEIDA's cooperative support. Phase I produced very positive results on the kapenta fishery. Phase II was late in starting up from its proposed 2007 date, not commencing until January 2008. Still, progress was continuous and progressive with most objectives (above) being addressed, and most expected outputs either being accomplished or met in part. The broad objectives of completing Fishery Management Plans (FMPs) for the (a) kapenta, (b) recreational and (c) artisanal fisheries have by necessity lagged behind data collection and interpretation. The Evaluation Team specifically acknowledges that the success during Phase II is a direct consequence of the dedication of JM Mafuca, Songo District, and the institutional support he received from the IIP.

ICEIDA by mutual agreement with the MP was not involved in the administration and day-to-day management of the Phase II Project. This passive approach, in the opinion of the Evaluation Team, led to unsatisfactory reporting and an aimless direction beyond Phase II. Even the richness of the history of the project was at stake. Particularly of concern was (1) the absence of planning forward for "Phase III" (regardless of the uncertainty of ICEIDA's ability itself to continue support for Mozambique's fishery sector) leading to the critical need of FMPs of the various fisheries sectors; (2) the targeting of funds to finalize the studies of a Ph.D. student

who's research on the limnological profiling of the lake is at the heart of understanding cause:effect relationships between the environment and fishery stocks; and (3) the inexcusable omission of the Project from a 2009 tri-lateral Memorandum of Understanding (MOU) between ICEIDA, MP, and Norway on the *Common Fund and Mechanisms of Common Dialogue in Support to the Fisheries Sector of Mozambique, 2009-2013.* This latter point is especially noteworthy given that (1) the MOU must be revisited and alterations agreed upon in order to recognize the Project and its activities as National priorities in order to receive continued support through 2019, and (2) the ICEIDA-sponsored Cahora Bassa projects represent the state-of-the-art for the management of Mozambique's inland fisheries resources, thus allowing of transferring the outcomes and experience to other inland waters, e.g., Lake Niassa.

B. DAC EVALUATION QUALITY STANDARDS

Following DAC Evaluation Quality Standards, the Evaluation Team drew the following conclusions:

1. Relevance of the Project

The Phase II PD was a "bottom:up" proposal coming from within the IIP/MP to ICEIDA. At that time, the National policy for fisheries centred upon three major issues, namely to:

- Improve fish protein supply to mitigate in part the National food shortage;
- Increase net foreign exchange earnings by the fishery sector; and
- Improve living standards of the fishing communities (alleviate absolute poverty)

The 2009 tri-lateral MOU between MP, Norway & ICEIDA is directed toward a new Fisheries Master Plan (PDP) for 2010-2019 with virtually the same underlying principles.

From the perspective of cross cutting issues, namely environmental sustainability and gender, the Evaluation concluded the following: These issues are at the core of good fisheries management in developing countries, e.g., Mozambique. The good management of fishery stocks for their sustainability is intimately linked to healthy ecosystems and *vice versa*. All fishery sectors (be it kapenta, artisanal, recreational and the developing aquaculture sectors in this case) are expected to provide long-term benefits to the fishing communities if managed appropriately. Women routinely play a direct role in these sectors either through securing protein for their families or through commercial enterprise or through employment within the sectors. Hence, the objectives of the Project are very much focused on these cross cutting issues identified in the TOR as well as the National policy for fisheries.

The Evaluation Team deemed the Project as **VERY RELEVANT.**

2. Efficiency

The Project was exceptionally productive especially given its late start-up date. The Project has achieved, and in some cases exceeded, most of its objectives. Further, the Project remains within budget. For these reasons, the Phase II Project was considered to be **EFFICIENT** by the Evaluation Team.

3. Effectiveness

As noted, the Project was **VERY EFFECTIVE** given the lack of administration oversight and routine M&E.

4. Sustainability

This is *the* key issue. The Project has obtained valuable information on Cahora Bassa's fisheries. However, much more is required in terms of research and planning to achieve the completion of FMPs, which should be the core of a new Phase III proposal. To this end, ICEIDA and the MP should work cooperatively toward securing adequate funding for (a) planning of the FMPs and (b) supporting the remaining years of study for a PhD student. This too means further consultation with Norway and the re-prioritization of Cahora Bassa fisheries activities as National priorities.

To the credit of the MP, the operational budget has steadily increased to the Songo District facility through the IIP from 2008 through 2010. This is very encouraging, although for 2010 the information presented to the Evaluation Team indicates about a 60% decrease in salaries and remuneration. If this is indeed correct, then the Evaluation Team has additional concern over sustainability. There is a genuine need to bring both the infrastructure and personnel to a level of "professional" self sufficiency. Amongst other issues, this also means streamlining the process whereby permanent employees can be hired in a timely fashion.

Based on concerns that are related to both ICEIDA and the MP, sustainability of the Project is **QUESTIONABLE** (at the time of writing)**.**

C. RESULTS OF INTERVENTION

Phase II was rather successful and effective in meeting several of its specific objectives and expected outputs of the PD:

- Infrastructure was upgraded at Songo,
- Human capacity development far exceeded expectations,
- Fisheries monitoring systems were partially in place, and
- There was positive interaction with stakeholders representing the kapenta fisheries sector.

Activities, outputs and reports for the recreational and artisanal fisheries generally lagged the accomplishments for the kapenta sector. The objective of preparation of Fishery Management Plans (FMPs) is fully one year off to completion, perhaps

longer. FMPs will require a multi-sectoral and intra-institutional (MP) approach to be effectively developed and implemented, thus requiring a focused effort to plan and integrate input from the various stakeholders.

D. LESSONS LEARNED

"Lessons learned" may be summarized as

- The Project has been cost effective and within budget thus far,
- The Project has retained a steady pace of accomplishments after a 1-year delay and would be considered "on schedule" except for the termination date of December 2010,
- Given the passive management and administration employed, the Project performed admirably,
- Project coordination on the part of the IIP has been exemplary,
- The Project lacked virtually any internal or external M&E protocol that could have served to promote project outputs,
- The Project's history including both Phases I and II has left a true legacy of cooperation between ICEIDA and the MP,
- Technically, the Project made significant advances "across the board" to facilitate the development of FMPs for Cahora Bassa's fisheries and a "holistic" management strategy for the lake,
- Since the Project is in its last stages, it is prudent to consider cooperative efforts with other organizations or donors that can potentially help to achieve the remaining objectives and priorities that are intimately linked to MDGs and National priorities,
- The Project will require an extension of time in order to fully accomplish its objectives and pending activities, and
- The IIP/MP should take steps to secure additional government funds by actively promoting the management of inland waters and fisheries as a critical component of the National priorities to alleviate poverty and to promote food security.

IV. RECOMMENDATIONS

The Evaluation Team emphasizes to ICEIDA, the MP and other prospective donors that (1) the Songo facility has evolved into THE "center of inland fisheries management" in Mozambique, (2) these capabilities and experiences are transferrable to other interior waters and their fisheries and (3) these capabilities and resources require continued future nurturing. These conclusions led the Evaluation Team to render recommendations that consider the Project in both the short- and long-term:

A. Short-term Phase II

1. It is recommended that the tri-lateral MOU be revisited to recognize Cahora Bassa inland fisheries program as a National priority with the experience transferrable to other inland waters/fisheries
2. It is recommended that ways and means be evaluated to continue support of PhD student in limnology through to completion (maximum 3 years)

3. It is recommended that in a "worst case scenario" for ICEIDA, critical needs be identified and prioritised to close out Phase II by December 2011
4. It is recommended that the level of funding that will be available through 2010-11 be assessed and the top priorities be targeted accordingly

B. Longer Term "Phase III" – to focus on preparation of FMP's

5. It is recommended that the IIP translate all research findings of the previous phases into meaningful management suggestions
6. It is recommended that MP-wide planning teams be established to (a) hold stakeholder workshops to acquire and synthesize meaningful input into FMPs, and (b) Evaluation, refine & recommend regulations for each sector
    a. FMPs require MP cross-sector input
    b. FMPs require stakeholder input
        1) Kapenta Fishermen's Association
        2) Recreational fisheries
        3) Artisanal fisheries – requires better defining and new regulations for subsistence, artisanal, and semi-industrial components
        4) Recognize freshwater aquaculture as an important component of the inland water fisheries sector
7. It is recommended that a protocol for Governance and Management of Phase III be established, to include
    a. Boards, Committees, Task Groups, etc
    b. Terms of Reference for each
    c. Define Membership of each
    d. Standard Operating Procedures (SOP) guidelines
    e. Semi-annual, quarterly, monthly, routine meetings
    f. Plan strategically to identify and prioritise activities on a 3-year time table
    g. Prepare and archive recorded minutes of each meeting
    h. Prepare quarterly, semi-annual or annual reports as deemed appropriate
    i. Mid-term external review
8. It is recommended that capacity needs at Songo (MP) be identified and addressed
    a. Infrastructure plus equipment
    b. Personnel needs, particularly in research and enforcement
    c. Adjust the budget accordingly
9. It is recommended that fish stocks, their biology, and fisheries statistics of all sectors continue to be monitored
10. It is recommended that resources be acquired for ecosystem modeling (Ecopath/EcoSim)
    a. Conduct lake-wide seasonal primary productivity study
    b. Conduct basic biology studies (age & growth, diet) on fish species at representative trophic levels

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ABBREVIATIONS

AIDS - Acquired Immunodeficiency Syndrome
ARA-Centro – Administrção Regional de Águas Zona Centro
CB – Cahora Bassa
CD - ICEIDA Country Director
DAC - Development Assistance Committee
FFP - Fundo de Fomento Pesqueira
FMP - Fishery Management Plan
GoM - Government of Mozambique
HIV - Human Immunodeficiency Virus
ICEIDA - Icelandic International Development Agency
IIP - Instituto Nacional de Investigação Pesqueira
ISPU – Instituto Superior Politécnico
M&E - Monitoring and evaluation
MDGs - Millennium Development Goals
MOU – Memorandum of Understanding
MP - Ministério das Pescas a.k.a. Ministry of Fisheries
Norway - Norwegian Embassy, Maputo Office
OECD - Organisation for Economic & Co-operation Development
PC - Project Coordinator
PD - Project Document
PDP - Fisheries Master Plan for 2010-2019
Phase II - acronym for Research, Monitoring and Development Project of the Fisheries in the Cahora Bassa Reservoir – Phase II
PIU - Project Implementation Unit
PM - Project Manager
Project – acronym for Research, Monitoring and Development Project of the Fisheries in the Cahora Bassa Reservoir – Phase II
PSB - Project Supervisory Board
PSC - Project Steering Committee
SAIAB - South African Institute for Aquatic Biodiversity
SOP - Standard Operating Procedures
TOR - Terms of Reference
UEM –Universidade Eduardo Mondlane
UniLúrio -Universidade de Lúrio

ACKNOWLEDGEMENTS

The Evaluation Team wishes to thank the ICEIDA delegation and all of the Ministry of Fisheries personnel for frank discussions concerning the Phase II Project. Very particular, Guðmundur Valur Stefánsson, ICEIDA's Fisheries Project Manager in Maputo, and Jorge Mario Mafuca, IIP's Project Leader, were outstanding hosts and provided the necessary background information to facilitate the Evaluation. The candid input from Ms. Clarisse Barbosa Fernandes, Program Officer at the Royal Norwegian Embassy, was appreciated. Lastly, we appreciated the keen insight to fisheries issues provided by representatives of the Cahora Bassa Kapenta Fisheries Association.

PROJECT SUMMARY SHEET

Country:	Mozambique
Sector:	Fishing Sector
Executing Agencies:	Ministry of Fisheries (MP)/Instituto Nacional de Investigação Pesqueira (IIP), Icelandic International Development Agency (ICEIDA)
Project Title:	The Cahora Bassa Reservoir Fisheries Research and Monitoring Project – Phase II
Project Period:	January 2007 - December 2010
Total Estimated Cost:	US$ 485,300
Donor:	ICEIDA
Tentative ICEIDA contribution:	US$ 440,000
Tentative GoM contribution:	US$ 45,300

I. INTRODUCTION

A. PROJECT OVERVIEW

The **Research, Monitoring and Development Project of the Fisheries in the Cahora Bassa Reservoir – Phase II** (a.k.a., Phase II or Project in this Evaluation) is a collaborative effort between ICEIDA and the Ministério das Pescas (MP, or Ministry of Fisheries) of the Government of Mozambique (GoM). Within MP, the Instituto Nacional de Investigação Pesqueira (IIP) is the implementing institution and is responsible for promoting scientific management of fisheries resources in Mozambican waters. ICEIDA commissioned an independent Evaluation of the Phase II Project in June 2010. This report presents the findings of the Evaluation Team.

The Phase II Project was formulated in 2006 and implemented in 2007 as a complementary continuation of the very successful **Phase I**, conducted 2003–2005 that principally concerned the kapenta fishery and capacity development at Cahora Bassa. The Cahora Bassa is situated along the Zambezi River in the Tete Province of Mozambique (15^o 29'S – 26^o 00'S x 30^o 25'E – 32^o 44'E). The lake is 246 km long with a maximum width of 39.8 km and estimated shoreline of 1,775 km. It covers a surface area of 2,665 km^2 making it the fourth largest reservoir in Africa.

The Cahora Bassa fish fauna is mainly composed of riverine species that successfully established themselves in the lake after dam closure. Bill and Mafuca (2008) reported that 44 species of fishes occur in the lake. At the time of formulation of the Phase II Project Document (PD), three fishery sectors were recognized: (1) an extensive artisanal fishery; (2) a semi-industrial kapenta fishery; and (3) recreational fisheries. More recently, there is interest in aquaculture. The artisanal fishery utilizes most all inshore fish stocks, while the kapenta fishery targets the clupeid *Limnothrissa miodon.* The tigerfish (*Hydrocinus vittatus*) and the Nile tilapia (*Oreochromis niloticus*) are the main species of the recreational fishery, which can include larger specimens of other species such as vundu (*Heterobranchus longifillis)*, cornish-jack (*Mormirops delicious),* African sharptooth catfish (*Clarias gariepinus)* and Kariba tilapia (*Oreochromis mortimeri*). Another important species is the schenga (*Distichodus schenga).* Both *L. miodon* and *O. niloticus* are non-native species that have invaded the lake presumably from Zimbabwe and Zambia located upstream.

B. PROJECT OBJECTIVES

The objectives and expected accomplishments of Phase II were well spelled out in the original Project Document (PD), i.e.,

> *The Project is a research-based project aimed at producing management options for the three fisheries, the semi-industrial, the Artisanal and the sport fisheries on the Cahora Bassa reservoir with the objective of minimizing fisher conflict and at the same time optimizing the harvest from Cahora Bassa.*

The specific objectives of the PD were*:*

- *Strengthening the infrastructure and research facilities of the IIP delegation in Songo.*

- *Building human capacity by creating a conductive environment for established researchers to conduct their work and by training Mozambique Researchers to MSc and PhD level.*
- *Conducting research and monitoring activities on the existing fisheries (semi industrial Kapenta, Artisanal and sport fisheries) in order to provide the information necessary for the development of holistic management strategies/plans for the lakes fisheries.*
- *Developing management strategies/plans for the major fisheries on the lake.*

The expected outputs of the PD were:

- *Infrastructure.*
  - *Infrastructure built in Songo.*
- *Human capacity.*
  - *One MSc and one PhD graduate from Mozambique by project end.*
  - *PhD thesis on bio-economy assessment of kapenta fishery.*
  - *MSc thesis on the physical, chemical and biological properties of the lake.*
- *Research reports.*
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- *Fisheries monitoring system established.*
  - *Maps of fishing areas for the various kapenta operators and fishing villages.*
  - *Catch and effort reports for all sectors are available by June each year.*
- *Management Strategies/Plans.*
  - *Management strategy/Plan for the Kapenta fishery.*
  - *Management strategy/Plan for the artisanal fishery.*
  - *Management strategy/Plan for the sport fishery.*
- *Other.*
  - *Existence of fishing associations and co-management groups*
  - *Increased awareness on HIV/AIDS among the fishing community.*

II. EVALUATION PROCESS

A. EXTERNAL EVALUATION

The Icelandic International Development Agency (ICEIDA) contracted an external Evaluation Team to evaluate the status and accomplishments of the Phase II Project in June 2010. The Evaluation Team consisted of Dr. Charles H Hocutt, Professor Emeritus of Fisheries, Walvis Bay, Namibia, and Dr. Adriano Afonso Macia Júnior, Professor, Department of Biological Sciences, Universidade Eduardo Mondlane (UEM), Maputo, Mozambique.

B. TERMS OF REFERENCE

The Terms of Reference (TOR) for the Evaluation Team were as follows: *The main objective of the analysis is to evaluate the outcome and impact (if possible) of the Project and examine the effects on the fisheries sector, communities, institutions and fisheries resources in Mozambique.... The evaluation shall be limited to activities financed by ICEIDA and cover the period from 2007 to the present.*

Following the Organisation for Economic & Co-operation Development (OECD) Development Assistance Committee (DAC) Evaluation Quality Standards, the Evaluation Team was expected to review the:

- **Relevance of the Project** in relation to:
    - Partners policy goals concerning poverty alleviation,
    - Mozambique needs as expressed in national fisheries policies and strategies, and
    - Cross-cutting issues related to environmental sustainability and gender as stated in the Partners policies.
- **Efficiency**. Assessment of the use of financial and human resources available to the Project. Of importance in this context is also to examine the coherence and complementarily between different projects and programs, and also coherence with other Icelandic or international development assistance programs in the Mozambique.
- **Effectiveness**. Examining the extent to which the Project's objectives were achieved, or are expected to be achieved, taking into account their relative importance.
- **Sustainability.** Assessing if net benefits are likely to continue after the completion of the assistance. Sustainability of the institutions was to be developed under the Project.

C. EVALUATION MATERIALS

The Evaluation included:

- A Evaluation of the Project Document (PD) as well as other implementation and technical reports, progress reports, final reports, stakeholder reports, minutes of meetings, and other written communications (see References);

- Interviews with representatives of the MP and more specifically the IIP and FFP; Tete Provincial Fisheries Officer; IIP delegate and Research Coordinator at Cahora Bassa; representatives of the Cahora Bassa Kapenta Fisheries Association; Royal Norwegian Embassy (Norway); current ICEIDA Country Director (CD) and Fisheries Project Manager; and past and current post-graduate (MSc & PhD) students (Appendix I);
- A visit and on-site inspection of the IIP facilities at Songo;
- A field reconnaissance of the lower lake to better understand the three fishing sectors; and
- Other materials obtained during the Evaluation.

III. EVALUATION FINDINGS

A. OVERVIEW

ICEIDA's cooperation with MP on the Cahora Bassa has been both meritorious and historic. Phase I was principally funded by the sale of an Icelandic research vessel *R.V. Fengur* meant for Namibia, with the proceeds directed toward research on the Cahora Bassa. In turn, the MP through the IIP established a full time presence on the reservoir that not only continues today, but with increased programmatic activities and budget through the combined financial support of Government and ICEIDA. The MP support to the IIP facility at Songo has increased steadily from 2008 through 2010 at a rate of 10% per annum to the point there is now US$ 1.50 vested for each US$ 1.00 provided by ICEIDA. ICEIDA provides no support for salaries and remuneration.

Phase II was delayed from its proposed start-up date of 2007 and did not commence until January 2008. "Progress" reports became "annual" reports with only three prepared thus far: (1) November 2007; (2) May 2008 (incorrectly dated May 2007); and (3) September 2009. These reports documented sustained progress and accomplishments, and this Evaluation further updates the accomplishments of Phase II, which are indeed numerous. Most objectives (above) have been addressed, and most expected outputs are either being accomplished or met in part. The broad objectives of completing Fishery Management Plans (FMPs) for the (a) kapenta, (b) recreational and (c) artisanal fisheries have by necessity lagged behind data collection and interpretation. Specifically, the Evaluation Team recognizes the dedication and commitment of the Project Leader, J.M. Mafuca, and the IIP itself for the continued and expanded institutional support of the inland research laboratory at Songo.

ICEIDA from the onset of Phase II applied a passive "hands off" approach to the administration, governance, management, and Monitoring and Evaluation (M&E) of the project (ICEIDA 2007a). In the opinion of the Evaluation Team, this led to unsatisfactory reporting and an aimless direction beyond Phase II. Even the richness of the history of the project was at stake. Added to these concerns is the real issue of ICEIDA's continued support beyond December 2010/2011, even for unfinished research and capacity development activities of Phase II. At the time of this Evaluation, economic conditions had forced ICEIDA to slash its global budget by perhaps 50% and to project only three potential recipient countries to receive continued aid beyond 2010, i.e., Malawi, Mozambique, and Uganda. Further, this aid had not yet been approved by the Icelandic Ministry of Foreign Affairs. Too, under

the situation of "best case scenario", there has been no forward planning for a complimentary Phase III and only cursory commitment to meet the education requirements of a Ph.D. student.

Presumably due to poor timing, but nearly inexplicable, the Project was omitted from the 2009 tri-lateral Memorandum of Understanding (MOU) between ICEIDA, MP, Ministry of Finance (MF), and the Norway on the *Common Fund and Mechanisms of Common Dialogue in Support to the Fisheries Sector of Mozambique, 2009-2013.* This means in effect that unless the MP re-prioritizes potential projects within the program, the Project would not be eligible for continued support in the context of the expected priorities of the next Fisheries Master Plan (PDP) 2010-2019 to be channelled through the MF. Having said this, ICEIDA, Norway and the IIP on behalf of the MP consider the MOU to be a living document.

B. DAC STANDARDS

1. Relevance of the Project

The Phase II PD was a "bottom:up" proposal coming from within the IIP/MP to ICEIDA. At that time, the National policy for fisheries centred upon three major issues, namely to:

- Improve fish protein supply to mitigate in part the National food shortage;
- Increase net foreign exchange earnings by the fishery sector; and
- Improve living standards of the fishing communities (alleviate absolute poverty).

Implicitly, the objectives of the Project were aimed toward (a) sustainable economic opportunities, (b) improved human capacity, and (c) maintenance of the ecosystem, in response to the Millennium Development Goals (MDGs) of economic development, food security and poverty alleviation. From the perspective of cross cutting issues such as environmental sustainability and gender, these are at the core of good fisheries management in developing countries, e.g., Mozambique. The good management of fishery stocks for their sustainability is intimately linked to healthy ecosystems and *vice versa.* All fishery sectors (be it kapenta, artisanal, recreational and the developing aquaculture sectors in this case) are expected to provide long-term benefits to the fishing communities if managed appropriately. Women routinely play a direct role in these sectors either through securing protein for their families or through commercial enterprise or through employment within the sectors.

The traditional artisanal/subsistence fishery often has a high level of women and children participation. The MP recognizes a semi-industrial artisanal fishery with a higher percentage of male fishermen, but the Evaluation Team also observed women fish mongers selling catch as common practice. Members of the CB Kapenta Fishery Association commented that there were about 3,500 workers in the industry, with perhaps 500 of them being women. There is no known data regarding women in the recreational fishery sector, but it is expected to be minimal other than indirectly through cooking and house cleaning chores at various lodges along the lake. The Project does not directly address AIDS which is a focus, however, of other GoM Ministries and donors.

As noted, the tri-lateral MOU between GoM, Norway and ICEIDA excluded this Project. This was an oversight regardless of the reason. It goes without saying that the objectives of Phase II, and Phase III if funding is realized, *at the very least* fit well within the intended Fisheries Master Plan (PDP) for 2010-2019. Alternately, the Evaluation Team is of the opinion that the outcomes of Phase II as continued through a proposed Phase III will be *critical* to the PDP to the extent the outputs will be the basis for preparing Fisheries Management Plans (FMPs) for the various fishery sectors of Cahora Bassa and represent the state-of-the-art in terms of Mozambique's inland water fisheries. In turn, this experience can be transferred to other locations/provinces, e.g., Niassa. As stated in the PD, *"...the project will have far reaching benefits beyond the target area and the results...are...likely to guide national fisheries policy*."

The Evaluation Team deemed the Project as **VERY RELEVANT.**

2. Efficiency

a. Project governance and management.- The IIP as the executing agency for the MP had overall responsibility for the administration of the Project (ICEIDA 2007a). Further, ICEIDA by mutual agreement was not involved in the daily operations of the Project. The contracting parties agreed to meet twice annually to discuss the Project's progress. A set of minutes conflictingly dated both 9 April 2007 and 9 April 2008 represent the first documented meeting of the contracting parties following Project initiation. Additionally, a single page of minutes dated December 2009 denotes that a meeting was held between the IIP and ICEIDA. These were the only minutes made available to the Evaluation Team for the 3-year period, 2007-2010. The Team's initial concerns centred upon Project efficiency and proper recording of Project history.

b. Financial accountability.- Originally, funds were disbursed through the Fundo de Fomento Pesqueira (FFP) to the IIP (NOTE: under a different FFP administration than today). This channelling of support proved awkward, e.g., lengthening the period between request of funds and actual need. Too, the IIP was informed during 2009 that all funds were exhausted when indeed steps were being taken at this writing in June 2010 to reimburse ICEIDA for monies not yet spent! This has led to an arrangement where the balance of ICEIDA funds for Phase II will be channelled directly to IIP bypassing the FFP. In some ways, these issues can be classified collectively as an "avoidable nuisance" for which corrective measures have been taken.

Of more substantial concern to the Evaluation Team in June 2010 was the appearance of budget irregularities, i.e., the total donor contribution vs. available balance. Two independent audits were being conducted both within the MP and ICEIDA with the results pending at that time. More recently, this concern was proven to be a non-issue based on analyses presented by A. Gísladóttir (*in litt.*, 27 July 2010), wherein ICEIDA's and MP's financial accounts were satisfactorily reconciled for the Project. The Project remains within budget, although there has been a necessity to shift financing between line items of the PD.

c. Capacity Development.- The Phase II PD had specific objectives related to both (1) infrastructure development at Songo and (2) training. It was acknowledged in the available progress reports that the original vision for the former was unachievable given the combined effects of under-budgeting and increased costs in materials and labor. While a (combined) laboratory/office complex was built and expanded upon using GoM funds, the infrastructure remains basic and deserves consideration for expansion and self sufficiency (in terms of research capacity).

With regards to human capacity development, the Project exceeded expectations, except for one instance (below). This included support to completion of 1 MSc degree, 5 BSc Honours projects, participation at various workshops and conferences, and preparation of various scientific manuscripts and reports. While the BSc Honour's students will not be incorporated into the IIP, their projects have been goal oriented to the objectives of Phase II.

The exception referenced above is the recent (but late in Project terms) matriculation of a PhD candidate at the University of Lisbon. The student's research prospectus concerns the limnological profiling of Cahora Bassa, critical to understanding the functioning of the system and the consequent linkage with fisheries productivity. A genuine concern for the Evaluation Team is the sustained support of the individual after 2010. For instance, there is no assurance that the individual will be eligible for continued support within the framework of the tri-lateral MOU referenced above.

It was also noted that there was a slight discrepancy regarding the stated objectives of the PD and actual accomplishments, i.e., a MS thesis on the bio-economics of the kapenta fishery and PhD dissertation concerning the physico-chemical parameters of the lake was produced or is currently enrolled, rather than vice versa.

d. Summary.- Based upon (a) the agreed upon protocol for day-to-day administration and management of the project, (b) late start-up date, (c) overall accomplishments, and (d) being within budget, the Phase II Project was considered to be **EFFICIENT** by the Evaluation Team.

3. Effectiveness

In light of the identified short comings, the Project has been very effective. The accomplishments have been continuous and sustained. Throughout the interviews, MP personnel from head office in Maputo to the Tete Provincial office to the Songo District office indicated there is support and ownership of this ICEIDA sponsored project. Inroads have been made into the various fisheries sectors, and since these are key stakeholders, the groundwork is being laid for meeting the ultimate objectives of FMPs for these sectors.

The specific objectives of the PD were

1. *Strengthening the infrastructure and research facilities of the IIP delegation in Songo;*
2. *Building human capacity by creating a conductive environment for established researchers to conduct their work and by training Mozambique Researchers to MSc and PhD level;*

3. *Conducting research and monitoring activities on the existing fisheries (semi industrial Kapenta, Artisanal and sport fisheries) in order to provide the information necessary for the development of holistic management strategies/plans for the lakes fisheries; and*
4. *Developing management strategies/plans for the major fisheries on the lake.*

Each of these objectives has been addressed in part by the Project except for the last item of developing FMPs for the various fishery sectors. However, the first MP meeting for developing a FMP for kapenta was to be held the week after the Evaluation! Objective 1 was completed so far as the budget could allow for infrastructure development and equipment purchase. For Objective 2, a MSc student completed his study, while a PhD student is currently enrolled at the University of Lisbon. Objective 3 is continuous and ongoing.

Outputs of the Phase II Project that were summarized in a September 2009 Progress Report are updated here:

1. BSc Honors

a. Buque, L.I.B. 2007. Distribuição e abundância da tilapia invasive *Oreochromis niloticus* Na Albufeira de Cahora Bassa. Trabalho de Licenciatura.Universidade Eduardo Mondlane. 41 pp.
b. Mandlate, L.M.Z. 2006. Estudo da Biodiversidade de Peixes da Albufeira de Cahora Bassa – Tete. Trabalho de Licenciatura. Universidade Eduardo Mondlane. 36 pp.
c. de Sousa, E. (2008). Estudo da Selectividade de Rede de Pesca de Kapenta (*Limnothrissa miodon*) na Albufeira de Cahora Bassa. Tese de Licenciatura. Universidade Eduardo Mondlane, 24 pp.
d. Halafo. M. (2009). Estudo de metais pesados na Albufeira de Cahora Bassa. Tete de Licenciatura. UEM, 32 pp.
e. Cunaise, A.J.S. Análise de factores hidrométricos e ambientais que influenciam a pesca de Kapenta na Albufeira de Cahora Bassa-On going.

2. MsC Degree

a. Mafuca, J.M. (2008). Bio-economic analysis of the Kapenta fishery of the Cahora Bassa Reservoir. Apolitécnica, 32 pp.

3. PhD Degree

a. Pegado, A.O. Caracterização limnológica da Albufeira de Cahora Bassa: Padrões de variabilidade hidrológica e dinâmica e sua influência na densidade populacional de Kapenta (*Limnothrissa miodon*). On going

4. Reports

a. Mafuca, J.M. & Pegado, A.O. 2005. *Catch and effort data analysis*. In: Research and Monitoring of the Kapenta fishery in Cahora Bassa, 2003-2004: Final report. *Instituto nacional de Investigação Pesqueira.*
b. Bill, R. and J.M. Mafuca (2008). *A report on the fish biodiversity of Cahora Bassa and the surrounding river catchments, central Mozambique (July, 2008).*

5. Workshops and Conferences

a. Pan African Fish and Fisheries Association. Addis Ababa, 2008. Presentation: *The Kapenta Fishery in the Cahora Bassa dam-Mozambique: the past, present and future (poster).*
b. Flood pulsed wetlands Symposium. Maun, Botswana, February 2010. Presentation: *Fish diversity in the Cahora Bassa reservoir some twenty five years after the dam closure: what has been the effect of the change from the lotic to lentic environments on the Zambezi River fish fauna?*
c. WORKSHOP sobre Investigação Científica nos Ecossistemas Aquáticos da Região Centro de Moçambique. July, 2009. Presentation: Análise da dinâmica das capturas de Kapenta (*Limnothrissa miodon*), na albufeira de Cahora Bassa

6. Articles produced

a. Mafuca, J.M. (2010). Some Aspects of the Reproductive Biology of Kapenta, *Limnothrissa miodon* (Boulenger 1906) in the Cahora Bassa Reservoir, Mozambique (under revision)
b. Mafuca, J.M. & R. Bills. (2010). Fish diversity in the Cahora Bassa reservoir some twenty five years after the dam closure: what has been the effect of the change from the lotic to lentic environments on the Zambezi River fish fauna? (Submitted)

7. Capacity Building

a. Courses Attended

1) Simrad Hydro-acoustic courses: September 2008 and August 2009. Attendants: Jorge Mafuca and António Pegado. Norway
2) Freshwater fish identification and biodiversity sampling methods course Theory, Grahamstown: July 2007; Practice, Cahora Bassa: July 2008.
3) Attendants: Jorge Mafuca, José Halafo, Elisa Inguane, Osvaldo Chacate, Alaijh Mudluli and Anastácia Simango.
4) Utilisation of Auto analyser (APNA): May, 2008. Attendants: António Pegado

b. Courses organized

1) Sampling methods for the artisanal fishery and Lake Cahora Bassa fish identification. April, 2005, February, 2008; August, 2009. Attendants: All the 12 beach recorders plus 2 fisheries extentionists from IDPPE .

In short, the Project was stunningly **EFFECTIVE** given the lack of administration oversight and routine M&E.

4. Sustainability

Sustainability is *the* issue. The very security of ICEIDA was uncertain at the time of the Evaluation. A budget for retaining ICEIDA's activities in Malawi, Mozambique and Uganda was presented to Iceland's Ministry of Foreign Affairs some two months ago, but it has yet to be approved and there is not a clear understanding when the matter will be resolved. The worst case scenario in terms of this Project appears to be that funding will not be approved for ICEIDA's own continuation, excepting a 1-year close out period to terminate in December 2010 to address as many obligations as possible. In the broadest terms, this has two key inferences: (1) further data collecting and planning in support of the preparation of FMPs, and (2) the stipend for the PhD student will each be halted. Given that the tri-lateral MOU does not include this project, that Norway no longer supports research, and that Norway has now put a ceiling on student support, sustainability is indeed the issue. The Evaluation Team recognizes that "sustainability" from the donor perspective means the continuity of the project/program AFTER donor funding ceases (for whatever reason). In this case, the Team considers "sustainability" to include donor participation until the ultimate objectives of the Project are accomplished, i.e., FMPs.

To the credit of the MP, the operational budget has steadily increased to the Songo District facility through the IIP from 2008 through 2010. This is very encouraging, although for 2010 the information presented to the Evaluation Team indicates about a 60% decrease in salaries and remuneration. If this is indeed correct, then the Evaluation Team has additional concern over sustainability. There is a genuine need for the MP to bring both the infrastructure and personnel to a level of "professional" self sufficiency. Amongst other issues, this also means streamlining the process whereby permanent employees can be hired in a timely fashion. It is underscored that (1) the Songo facility has evolved into THE "center of inland fisheries management" in Mozambique and (2) these capabilities and resources require continued future nurturing.

Based on concerns that are related to both ICEIDA and the MP, sustainability of the Project is **QUESTIONABLE** (at the time of writing)**.**

C. RESULTS OF INTERVENTION

Phase II was rather successful and effective in meeting several of its specific objectives and expected outputs of the PD, given the above constraints. These achievements are recognized in a Logical Framework Approach (LFA) matrix, i.e., Table 1. Certain aspects of expected outputs and achievements deserve attention. Comments offered refer to the Development Objectives in Table 1.

1. Infrastructure.- Cooperation between ICEIDA and MP during Phases I and II provided the solid foundation for IIP presence on the Cahora Bassa in terms of infrastructure development and equipment. However, much more is required to meet the original vision of adequate laboratory and housing facilities at Songo. It is urged that the MP respond to this need.

2. Human capacity.- Commendably, Phase II accomplished far more than was projected in the PD. However, most persons who received training/mentoring were external to the IIP/MP, hence there remains a need to build the professional staff at Songo, streamline the procedures for hiring, and provide adequate housing (as referenced above) to facilitate recruitment. Every effort should be made to secure the financial support required to see the PhD student through to completion at the University of Lisbon.

3. Research reports.- The lack of completion of (a) GIS maps of vulnerable areas along the lake and (b) proposals for closed areas go hand-in-hand for the development of an effective management strategy for the lake and its fisheries. Too, the data bases for the recreational and artisanal fisheries lag significantly behind the more comprehensive studies of the kapenta fishery.

4. Fisheries monitoring systems.- The monitoring system for the kapenta fishery appears to be effectively in place. The recreational fishery monitoring has been initiated, but requires significant public relations networking around the lake with tour operators and lodges to ensure an effective system. Monitoring of the artisanal fishery remains an issue and may indeed require additional MP resources.

5. Fishery Management Plans (FMPs).- Phase II has been effective, but not completely so, in acquiring adequate baseline information for the preparation of FMPs. The data acquisition phase and subsequent data interpretation phase represent a never ending process in fisheries management. Management strategies are often revised on an annual basis taking into account new information on the biology and exploitation of individual species, as well as shifts in water quality and quantity that might impact the respective fishery. This point has specific reference to (2) above regarding the need for a vibrant staff at Songo that is representative of a "critical mass", .i.e., sufficient personnel to effectively address the identified priorities that will lead to sound management of the resources.

   FMPs will require a multi-sectoral and intra-institutional (MP) approach to be effectively developed and implemented. With regards to the former, this requires a focused approach to ensure full stakeholder participation with respect to each fishery. In terms of the latter, this means representation and cooperation between the pertinent MP institutions that have a shared interest or input to a specific fishery. Each of these requires careful consideration and planning.

6. Other.- To date, only the kapenta fishery has a representative sector association. A recreational fisheries sector association should in theory be relatively easy to establish amongst the lodges and tour operators, but there is need to build an open and continuous rapport with sector representatives. A formal "artisanal association" will likely be difficult to organize and maintain given the routine flux of participants, the various sub-sections of the artisanal fishery, and the broad geographic scale.

Table 1: Logical Framework Approach (LFA) Evaluation of Phase II Project through June 2010 (√-Completed).

Development Objective	Inputs	Indicators	Planned Date	Outputs (Status June 2010)	Observation
Strengthening the infrastructure and research facilities of the IIP delegation in Songo	**Strengthen infra-structure and research facilities in Songo**	Infrastructure built in Songo	October 2006	√ Infrastructure in place in Songo; Civil works on the offices and house; procurement of goods: Vehicle, CTD, radar, boats and engines.	There was a delay of one year due to disbursement problems. The initial idea of infrastructures for this phase was to construct a house for the provincial officer, but the projected budget allocation was far too low, therefore completion was abandoned by mutual consent
Building human capacity by creating a conductive environment for established researchers to conduct their work and by training Mozambique Researchers to MSc and PhD level	**Two (2) IIP staff complete studies at Post-graduate level**	One MSc and one PhD graduate from Mozambique by project end	2008 **Ongoing**	√ Mafuca, J.M. - MSc thesis on Bio-economy Pegado, A. - PhD Dissertation	Completed The PhD has a delay of 2 yrs
	PhD thesis on bio-economic assessment of kapenta fishery	MSc (PhD) thesis on bio-economy assessment of kapenta fishery	2008	√ Mafuca, J.M.MSc thesis on Bio-economy MSc	This was meant for an MSc not PhD
	MSc thesis on the physical, chemical and biological properties of the lake	PhD (MSc) thesis on the physical, chemical and biological properties of the lake	2010	Ongoing Research activities (A. Pegado)	This was meant for a PhD, not MSc. Delayed but ongoing
	Research reports ○ Fish biodiversity report	Completed report on fish biodiversity	2008	√ Bill, R. and J.M. Mafuca (2008). A report on the fish biodiversity of Cahora Bassa and the surrounding river catchments, central Mozambique (July, 2008).	
	○ GIS maps of vulnerable areas along the lake	GIS maps of vulnerable areas completed		**Not initiated**	Completion date uncertain

	o Report on the distribution, population dynamics and biology for the main species exploited by the artisanal fishery	Individual reports for each important species exploited by the artisanal fishery		√ Only one Report on Distribution and abundance of Tilapia	Reports for other species uncertain
	o Proposal for closed areas	Proposal(s) developed for restricted areas		**Not initiated**	Completion date uncertain
	o Stock assessment report on exploited species with management recommendations	Stock assessment reports completed with management implications		**Not initiated**	Completion date uncertain
	o Report on bio-economy assessment of kapenta fishery	Bio-economic assessment report for kapenta completed	2008	√ Mafuca, J.M. (2008). Bio-economic analysis of the Kapenta fishery of the Cahora Bassa Reservoir. Apolitécnica, 32 pp.	
	o Report on physical, chemical and biological properties	Report completed on physic-chemical properties of Cahora Bassa	2010	Pegado, A.O. Caracterização limnológica da Albufeira de Cahora Bassa: Padrões de variabilidade hidrológica e dinâmica e sua influência na densidade populacional de Kapenta (*Limnothrissa miodon*). On going PhD research	Report completion delayed for 2 years
	o Report on the potential and sustainable yields for the artisanal and kapenta fisheries, based on stock assessments	Completed report on potential and sustainable yields of kapenta, based on stock assessments	2009	√ Mafuca, J.M. & Pegado, A.O. 2005. *Catch and effort data analysis*. In: Research and Monitoring of the Kapenta fishery in Cahora Bassa, 2003-2004: Final report. *Instituto nacional de Investigação Pesqueira*.	Only report on kapenta fisheries. Sustainable yield analysis in progress.

	Honours reports	-	2006	√ Mandlate, L.M.Z. 2006. Estudo da Biodiversidade de Peixes da Albufeira de Cahora Bassa – Tete. Trabalho de Licenciatura. Universidade Eduardo Mondlane. 36 pp.	**Produced in collaboration with UEM. The Honours reports planned dates were set in accordance to the period the research protocols were delivered by the students involved from UEM. <u>The Honour's reports and capacity development opportunities exceeded PD expectations</u>**
			2007	√ Buque, L.I.B. 2007. Distribuição e abundância da tilapia invasive *Oreochromis niloticus* na Albufeira de Cahora Bassa. Trabalho de Licenciatura.Universidade Eduardo Mondlane. 41 pp.	
			2008	√ de Sousa, E. (2008). Estudo da Selectividade de Rede de Pesca de Kapenta (*Limnothrissa miodon*) na Albufeira de Cahora Bassa. Tese de Licenciatura. Universidade Eduardo Mondlane, 24 pp	
			2009	√ Halafo. M. (2009). Estudo de metais pesados na Albufeira de Cahora Bassa. Tete de Licenciatura. UEM, 32 pp.	
			On going	Cunaise, A.J.S. Análise de factores hidrométricos e ambientais que influenciam a pesca de Kapenta na Albufeira de Cahora Bassa-**On going**	
	Articles		2010	√ Mafuca, J.M. (***under revision***). Some Aspects of the Reproductive Biology of Kapenta, *Limnothrissa miodon* (Boulenger 1906) in the Cahora Bassa Reservoir, Mozambique.	**Under revision**
				√ Mafuca, J.M. & R. Bills. (***Submitted***). Fish diversity in the Cahora Bassa reservoir some twenty five years after the dam closure:	**Submitted**

				what has been the effect of the change from the lotic to lentic environments on the Zambezi River fish fauna?	
	Participation in Workshops and Conferences				**These were not foreseen as project outputs in the list of expected outputs but were delivered as additional outputs**
			2008	Pan African Fish and Fisheries Association. Addis Ababa, 2008. Presentation: *The Kapenta Fishery in the Cahora Bassa dam-Mozambique: the past, present and future* (Poster). √	Poster by J. Mafuca
			2009	WORKSHOP sobre Investigação Científica nos Ecossistemas Aquáticos da Região Centro de Moçambique. July, 2009. Presentation: Análise da dinâmica das capturas de Kapenta (*Limnothrissa miodon*), na albufeira de Cahora Bassa √	Oral Presentation by J. Mafuca
			2010	Flood pulsed wetlands Symposium. Maun, Botswana, February 2010. Presentation: *Fish diversity in the Cahora Bassa reservoir some twenty five years after the dam closure: what has been the effect of the change from the lotic to lentic environments on the Zambezi River fish fauna?* √	Oral Presentation by J. Mafuca
	Training courses out of planned outputs - Fish taxonomy and sampling methods		2008	√ Freshwater fish identification and biodiversity sampling methods course Theory, Grahamstown: July 2007; Practice, Cahora Bassa: July 2008. Attendants: Jorge Mafuca, José Halafo, Elisa Inguane, Osvaldo Chacate, Alaijh Mudluli and Anastácia Simango.	**These were not foreseen as project outputs in the list of expected outputs but were delivered as additional outputs** Two courses held on freshwater fish identification and sampling methods: one in Grahamstown, RSA and the other in Songo.

	- Sampling methods		2008	√ Sampling methods for the artisanal fishery and Lake Cahora Bassa fish identification. April, 2005, February, 2008; August, 2009. Attendants: All the 12 beach recorders plus 2 fisheries extentionists from IDPPE	
	- APNA		2008	√ Utilisation of Auto analyzer (APNA): May, 2008. Attendants: António Pegado- USA	
	- CTD		2009	√ Simrad Hydro-acoustic courses: September 2008 and August 2009. Attendants: J.Mafuca and A.Pegado- Norway	
Fisheries monitoring system established	**Fisheries monitoring system in place & functioning**				
	Maps of fishing areas for the various kapenta operators and fishing villages	Maps are prepared depicting kapenta operators & fishing villages	2010		
	Catch and effort reports for all sectors are available by June each year	Archived records are maintained and interpreted	2010	Catch data available but report not produced yet	On going. Data collection started in 2007. There is a need for the IIP artisanal fisheries department to analyse the data being collected
Fisheries Management Plans (FMPs)/ Strategies	**Management strategy/ Plan for the Kapenta fishery**	FMP for Kapenta fishery is developed through stakeholder involvement	2010	Most data available but MP not performed yet	This is expected to be performed in 2011
	Management strategy/ Plan for the artisanal fishery	FMP for artisanal fishery is developed through stakeholder involvement	2010	Data are still being collected but MP not performed	Data collection to require at least 6 more months
	Management strategy/ Plan for the sport fishery	FMP for sport fishery is developed through stakeholder involvement	2010	Data are still being collected but MP not performed	Data collection to require at least 6 more months

Other					
	Existence of fishing associations and co-management groups	Fishing associations and co-management groups are formed or facilitated	2010	√ Kapenta semi-industrial Fisheries Association formed. Co-management group on way to be created	Sport & artisanal associations lagging kapenta
	Increased awareness on HIV/AIDS among the fishing community		2010	There is no awareness campaign yet in Cahora Bassa Dam	No Non-Government (NGOs) or government agencies working with the communities in this respect yet

D. LESSONS LEARNED

1. Budget.- Based on both the empirical data collected and actual accomplishments, the Phase II Project is considered to be a very cost effective donor-assisted development activity albeit not fulfilling all of the PD's aspirations. To be fair, however, the PD was without question overly ambitious given the constraints of lack of personnel, time limitations, and data gathering/interpretation requirements. The Project remains within budget at the time of this report with the MP steadily increasing the budget for operational costs of the Songo facility.

2. Schedule.- For most of the same reasons as just stated, plus the late start up date, the Project will not be completed on schedule. An ultimate goal to produce FMPs for the three targeted fisheries, plus aquaculture as recommended herein, is unlikely to be achieved within another year.

3. Project management & administration.- Given the passive management style agreed upon by the contracting parties, the Project performed admirably!

4. Project coordination.- The coordination of the Project by J. Mafuca and the reciprocal support he received through the IIP was (and remains) a singular strength of the Project.

5. Monitoring & Evaluation.- The Phase II Project lacked virtually any internal or external M&E protocol. Indeed, by all accounts this was also lacking in Phase I. Both internal and external evaluation activities normally serve to promote project outputs.

6. Project history.- The Project's rich history and value to Mozambique, especially regarding the IIP's presence in inland waters, including Phase I, was nearly lost. The lack of both internal and external Evaluations contributed to this concern. Also, a major contribution was the informal approach toward meetings, recording of accurate minutes, and the archiving of such minutes.

7. Technical performance.- The Phase II Project made significant advances "across the board" to facilitate the development of FMPs for Cahora Bassa's fisheries and a "holistic" management strategy for the lake. In turn, the experiences gained and the infrastructure that was developed are transferable to other inland waters of Mozambique as well as neighboring countries, e.g., Zimbabwe.

   Numerous reports were produced that further the knowledge of Mozambique's resources.

8. Infrastructure development.- The specific objective related to infrastructure development at Songo was acknowledged in the available progress reports that the original vision was unachievable given the

combined effects of under-budgeting and increased costs in materials and labor. However, a (combined) laboratory/office complex was built and expanded upon using GoM funds which speaks very positively for project sustainability and the IIP.

9. Human capacity development.- The Project far exceeded expectations in this regard. On one hand, it is unfortunate that none of the trained BSc Honour's students were incorporated into the IIP or at Cahora Bassa, taking into account the need for human resources at IIP delegations and despite the fact that the Songo infrastructure remains basic and deserves consideration for expansion and self sufficiency (in terms of human capacity). On the other hand, it is difficult to factor the full positive impact of the Project's capacity development given that most recipients were external to the IIP. The experiences they gained will be measured at some point in the future perhaps serving the private sector or a Ministry other than MP. Too, the vital role of the IIP personnel serving as mentors to Honour's students cannot be overlooked.

10. Stakeholder relations.- IIP's Songo laboratory has taken positive strides toward building the necessary relationships with the various fisheries sectors. For instance, members of the CB Kapenta semi-industrial Fishery Association are keen to collaborate with IIP to assist research activities through the use of their boats or nets whenever possible to enhance the management of fisheries in the CB. This is a rewarding aspect to the IIP especially because there is recognition of the value of the Project.

12. Partnering.- Since the Project is in its last stages of Phase II, it might be prudent to consider cooperative efforts with other organizations or donors that can potentially help to achieve the remaining objectives and priorities that are intimately linked to MDGs and National priorities. In addition to donors other than Norway, this might include, for example, the Universities (UEM/ISPU/UniLurio), ARA-Centro as well as other research institutions that may have research interest in the Cahora Bassa.

13. The Project will require an extension of time in order to fully accomplish its objectives and pending activities.

14. The IIP/MP should take steps to secure additional government funds by actively promoting the management of inland waters and fisheries as a critical component of the National priorities to alleviate poverty and to promote food security.

IV. RECOMMENDATIONS

The Evaluation Team has recognized strengths and weaknesses in the Phase II Project. Notable in the short-term there is the uncertainty of continued financial support of ICEIDA's Maputo office to the MP/IIP. Further, it was recognized that the MP has continued to increase the support of the Songo facility since 2008 (enhancing sustainability), but dramatically decreased the 2010 contribution for salaries and remuneration, thereby sending mixed signals. From the long-term perspective, there has been no ICEIDA-led planning for a "Phase III" to facilitate the preparation of FMPs, especially across multi-sectoral and intra-institutional (MP) lines (Figure 1). For these reasons, the Evaluation Team gives recommendations to meet the immediate short-term needs and obligations of the Project and gives guidance on the long-term requirements for a successful "Phase III."

A. Short-term Phase II

1. It is recommended that the tri-lateral MOU be revisited to recognize Cahora Bassa inland fisheries program as a National priority with the experience transferrable to other inland waters/fisheries
2. It is recommended that ways and means be evaluated to continue support of PhD student in limnology through to completion (maximum 3 years)
3. It is recommended that in a "worst case scenario" for ICEIDA, critical needs be identified and prioritised to close out Phase II by December 2011
4. It is recommended that the level of funding that will be available through 2010 be assessed and the top priorities be targeted accordingly

B. Longer Term "Phase III" – to focus on preparation of FMP's

5. It is recommended that the IIP translate all research findings of the previous phases into meaningful management suggestions
6. It is recommended that MP-wide planning teams be established to (a) hold stakeholder workshops to acquire and synthesize meaningful input into FMPs, and (b) Evaluation, refine & recommend regulations for each sector
    a. FMPs require MP cross-sector input
    b. FMPs require stakeholder input
        1) Kapenta Fishermen's Association
        2) Recreational fisheries
        3) Artisanal fisheries – requires better defining and new regulations for subsistence, artisanal, and semi-industrial components
        4) Recognize freshwater aquaculture as an important component of the inland water fisheries sector
7. It is recommended that a protocol for Governance and Management of Phase III be established, to include
    a. Boards, Committees, Task Groups, etc
    b. Terms of Reference for each
    c. Define Membership of each
    d. Standard Operating Procedures (SOP) guidelines
    e. Semi-annual, quarterly, monthly, routine meetings

f. Plan strategically to identify and prioritise activities on a 3-year time table
g. Prepare and archive recorded minutes of each meeting
h. Prepare quarterly, semi-annual or annual reports as deemed appropriate
i. Mid-term external review

8. It is recommended that capacity needs at Songo (MP) be identified and addressed
    a. Infrastructure plus equipment
    b. Personnel needs, particularly in research and enforcement
    c. Adjust the budget accordingly
9. It is recommended that fish stocks, their biology, and fisheries statistics of all sectors continue to be monitored
10. It is recommended that resources be acquired for ecosystem modeling (Ecopath/EcoSim)
    a. Conduct lake-wide seasonal primary productivity study
    b. Conduct basic biology studies (age & growth, diet) on fish species at representative trophic levels

V. SUMMARY

The Evaluation Team is pleased with the accomplishments of the Phase II Project, particularly in light of the passive management style that was employed. Combined with Phase I, ICEIDA has a very positive legacy with the MP in Mozambique.

It is emphasized to ICEIDA, the MP and other prospective donors that (1) the Songo facility has evolved into THE "center of inland fisheries management" in Mozambique, (2) these capabilities and experiences are transferrable to other interior waters and their fisheries, and (3) these capabilities and resources require continued future nurturing. These conclusions led the Evaluation Team to render recommendations that consider the Project in both the short- and long-term.

Despite the financial situation ICEIDA finds itself in, there should have been joint planning for a follow-on "Phase III" to lead the project toward the goal of FMPs for the three recognized fishing sectors and, more recently, aquaculture

It was remiss to omit this Project and a potential follow-on "Phase III" out of forward planning and the tri-lateral MOU. Although the MOU is considered as a "living document" thus permitting revision, it might take considerable time to elevate Cahora Bassa project to a priority level. The Evaluation Team emphasizes *strongly* that this omission be addressed as soon as possible since the Cahora Bassa project represents the very essence of inland waters fisheries management within the Republic.

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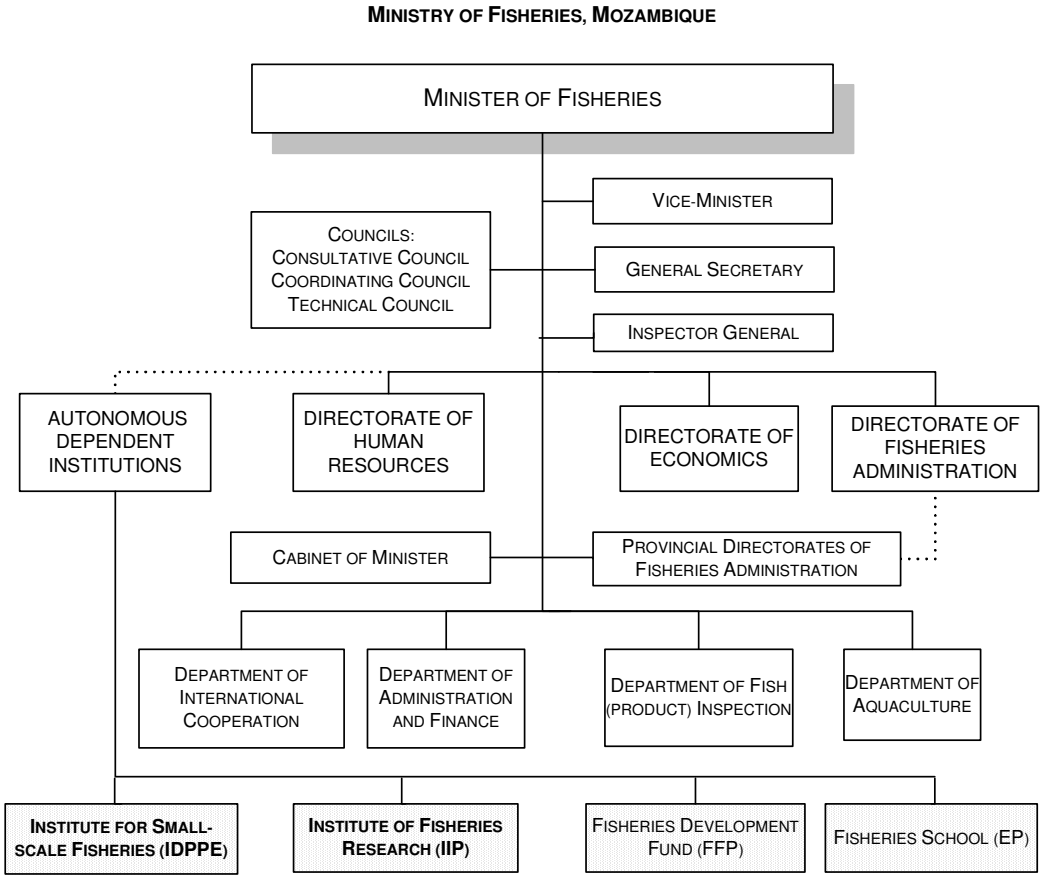

FIGURE 1. ORGANISATION CHART OF THE MINISTRY OF FISHERIES

APPENDIX I. List of Persons Interviewed by the Evaluation Team

ICEIDA
- Margrét Einarsdóttir – Country Director (Time of Evaluation, June 2010)
- Agusta Gísladóttir – Country Director (Final debriefing, August 2010)
- Guðmundur Valur Stefánsson - Fisheries Project Manager in Mozambique

MINISTRY OF FISHERIES

Direcção Nacional de Administraçãao Pesqueiro
- Cláudia Tomás

Fundo de Fomento Pesqueiro
- Maria Ascensá Ribeiro Pinto – Director
- Abilio Muchanga – Chief, Financial Department
- Tânia Aleixo – Accountant

Instituto Nacional de Investigação Pesqueira
- Domingos Gove – Director
- Paula Santana Afonso- Deputy Director
- Jorge Mario Mafuca – Project Leader
- António Pegado – Limnologist & PhD student

Tete Province
- Maria Cunhete Chingoma Citando - Provincial Director of Fisheries

Department for Small Scale Fisheries
- Isabel Chauca - Head

Royal Norwegian Embassy
- Ms. Clarisse Barbosa Fernandes – Program Officer

Representatives of the Cahora Bassa Kapenta Fisheries Association
- K. Naudi – Bon dia Kapenta
- O. Swan – Nhenda Fisheries
- H. Fernoughm – Brian & Helen Safaris