

**SUPPORT TO THE REGIONAL AQUACULTURE  
TRAINING PROGRAM AT BUNDA COLLEGE OF  
AGRICULTURE  
UNIVERSITY OF MALAWI  
2000-2005**



An External Evaluation

By  
Thor Asgeirsson (MSc, MEd), Iceland  
Dr. Charles Mosangano, Malawi  
Dr. Stanley Khaila, Malawi

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## EXECUTIVE SUMMARY

Malawi is a landlocked country where people get their living mainly from agriculture. Fisheries is also an important part in the lives of many Malawians, especially for the communities that live close to the lakes and rivers. Lake Malawi has, along with Lake Chilwa, been the food source for those communities and 95% of the catch comes from those lakes. For the past 15 years the catch has gradually reduced and Malawians have had to turn to other types of fish production such as aquaculture. At the same time emphasis has been on strengthening education in that sector by establishing training centers and improving teaching in fisheries in various schools.

In 1993 ICEIDA began its support of aquaculture training at Bunda College of Agriculture, but training in aquaculture at Bunda dates back to 1965 with the construction of a dam and breeding tanks. In the early 90's similar trends in fisheries could be seen in other SADC countries and since Bunda College of Agriculture had pioneered the aquaculture development in the SADC region it was proposed that Bunda College of Agriculture would be a regional training center for aquaculture development. The support from ICEIDA during the period 1993-1999 consisted mainly of student financial support and staff development. Support to the aquaculture programme at Bunda also came from other donors such as US, Canada, Japan, and Norway and was mainly towards curriculum development, management and facilities. At the end of this period the aquaculture programme at Bunda had 5 staff members (one PhD and four MSc) and excellent facilities for aquaculture research. The support from ICEIDA to Bunda College of Agriculture continued in 2000 with the project "Support to the Regional Aquaculture Training Program at Bunda College of Agriculture 2000-2005". The main objective of the project was to: Create a centre of excellence in training and research in aquaculture and fisheries science in Malawi and the SADC region.

The objective is to be reached through the more specific objectives:

1. to deliver an effective and top quality courses in fisheries and aquaculture science
2. to increase awareness of the program in the SADC region
3. to enhance capability in carrying out cutting-edge research in demand driven research areas

In the agreement ICEIDA was to provide scholarships and study grants to students, support staff development, support the aquaculture and fisheries section of the BCA library, support locally sourced teaching, and provide technical assistance (ICEIDA expert). BCA was to provide necessary staff for the Aquaculture and Fisheries Science Department (AFSD) and necessary administrative support to recruit students and carry out the project.

In October 2003 an external evaluation on the progress of the project was requested by ICEIDA. The timing was related to the fact that all student support has been granted and it was necessary to consider whether to continue support to the Regional Training Programme or not and, if so, how. An evaluation team was formed with an Icelandic team leader, Mr. Thor Asgeirsson and two Malwian counterparts, Dr. Charles Mosangano

and Dr. Stanley Khaila from BCA. On site data collection took place during two weeks in November the same year. In general, the evaluation should;

- ✓ evaluate the goals and purposes of the project and determine to what extent the goals have been achieved;
- ✓ evaluate inputs and outputs and financial management of the project
- ✓ consider unintended outcomes of the project;
- ✓ evaluate the impact for the beneficiaries (BCA, the students, other countries in SADC), or how it can be measured in the future if not obvious yet;
- ✓ provide a description of major constraints and risk factors for the project implementation;
- ✓ assess the degree of the project's sustainability;
- ✓ provide a description of lessons learned in relation to future programme implementation;
- ✓ give recommendations on future modifications and improvements in light of the above listed objectives.

During the three years of the project considerable progress has been made. All of the money for the scholarships and study grants to BSc and MSc had been granted and the total number of students receiving support is about 70. On a regional level four countries, Zambia, Swasiland, Uganda and Mozambique, have benefited from the project and most of the regional students have come from Zambia. The library has been able to build up its fisheries section and in addition a reprint database has been created. The ICEIDA expert has contributed to the AFSD through teaching and various research activities and his participation on committees. The commitment of BCA is also obvious during the three years of the project period. More staff has been recruited and is now 12 in comparison to five in 1999. The master's degree programme has also been established.

The evaluation team felt that the results of the ICEIDA support has to be evaluated in context with the work done and progress during the first phase of the support, i.e. during 1993-1999. So for the 10 years period the ICEIDA support has made a tremendous contribution to the aquaculture component of BCA. BCA has moved from offering one course in aquaculture with limited facilities to having a separate department with 12 positions with highly qualified staff and research facilities that are considered one of the best in sub-Saharan Africa.

The weaknesses of the project are mainly felt in the management and financial administration.

1. Book allowances: The team has failed to understand the justification of providing US\$200 per student as compared to the rest of the students at Bunda College who receive US\$50 per student.
2. Research funds: The team felt the allocation of research fund should have consider the need rather than allocating fixed amount per student.
3. Awareness: The team felt no properly planned activities were undertaken to increase awareness of the programme in the region.

4. Dual role of ICEIDA expert: The team feels the dual role of ICEIDA expert as technical assistant and a project officer might cause conflict of interest in the implementation and management of the project.
5. Tuition increase: The untimely (for the project) changes in the BCA fees affect the results of the project causing the project to reduce its output and hence reduce the efficiency. It can be argued that the initial budget was not planned well enough by both parties. The budget changes with the increase in tuition and addition of fees is an evidence of that.
6. Regional component: The team fears the fact that when scholarships are no longer available to the regional students the program will not be able to serve as a regional training center.

The evaluation team thinks the following recommendations should be considered by both parties.

1. Despite tremendous progress of the aquaculture support project, a ten year period of support is long enough for ICEIDA to start thinking of withdrawing or refocusing the support into some other areas.
2. In this regard the evaluation team is of the opinion that support for undergraduate scholarships and study grants for Malawian students should be stopped. The Malawian government is already supporting most of the students at BCA and this support can be extended to the students in the aquaculture programme. Therefore the project should not sponsor any other Malawian students for their BSc studies.
3. The evaluation team recommends that the support for the regional students should continue in order to continue giving a regional flavour to the programme.
4. Scholarship support for MSc. students from Malawi and the SADC region should however be continued since these programmes are currently not being supported by the Government of Malawi. The programme is not mature enough to stand on its own but with greater awareness in the region other donors might see the AFSD as option for training individuals from other regional projects.
5. In relation to the great demand for fingerlings in Malawi, BCA can play a major role in providing fingerlings to the local community. The facilities at BCA are very much underutilized. Fingerlings production might generate income for the department which will contribute to the financial viability of the AFSD. An initial support towards such activity will be valuable for the programme.
6. The library has been receiving support from ICEIDA that has been well utilized. At this moment the library is very well equipped with a computer system and fiber optic connection on the campus. Bunda is acquiring a satellite connection to internet through a VSAT donated to MALICO "the Malawi Library and Information Consortium. Assistance is needed towards monthly charges, which are now about US\$ 3000 for 512 kb, to run the satellite connection. Such a connection will encourage uptake of on-line journal articles and other electronic opportunities and contribute to the strengthening of the capacity of the AFSD. Future support for BCA could consider this area.
7. The evaluation team suggests a specific activities towards creating this awareness being implemented in the remaining period of the project. Some of the activities that could be considered include:

- a. Web page
- b. Site visits
- c. Prospectus

It would be beneficial for the department to identify a specific person who would be responsible for following up on the awareness activities and looking for sponsorship for future MSc students in the region. This will contribute to the sustainability of the programme.

- 8. The evaluation team is of the opinion that future support to this programme should consider creating a research fund for students. Such a fund will assist the department to allocate funds according to needs of specific student research projects.
- 9. Considering the problems that the college has been experiencing regarding transfer of funds to the department and students, it would be more efficient to open a special account for project funds. Such an account will facilitate timely disbursements of funds and contribute to the efficiency of the project.

## TABLE OF CONTENT

<b>EXECUTIVE SUMMARY .....</b>	<b>2</b>
<b>LIST OF FIGURES.....</b>	<b>8</b>
<b>LIST OF TABLES.....</b>	<b>8</b>
<b>1 INTRODUCTION.....</b>	<b>9</b>
1.1 PLAN OF WORK AND METHODOLOGY .....	10
1.2 FISHERIES AND AQUACULTURE IN MALAWI AND SADC REGION.....	10
1.2.1 <i>Malawi</i> .....	10
1.2.2 <i>SADC region</i> .....	12
1.3 TRAINING NEEDS IN THE SADC REGION .....	14
1.4 BACKGROUND OF AQUACULTURE TRAINING AT BCA .....	15
1.4.1 <i>Curriculum Developments</i> .....	16
1.4.2 <i>Number of Students in the Programme</i> .....	16
1.4.3 <i>Staff Developments</i> .....	17
1.4.4 <i>ICEIDA Support in the 1994-99 Period</i> .....	18
1.4.5 <i>JICA and Japanese Government Support to the Aquaculture and Fisheries Science Department</i> .....	18
1.4.6 <i>Support by CIDA</i> .....	19
1.4.7 <i>Support by ICLARM</i> .....	19
1.4.8 <i>Support by NORAD</i> .....	19
<b>2 THE PROJECT 2000-2005 .....</b>	<b>19</b>
2.1 OBJECTIVES OF THE PROJECT .....	20
2.2 PROJECT DESCRIPTION.....	20
2.2.1 <i>Selection of Malawian and regional ICEIDA supported students</i> .....	22
2.2.2 <i>Project Budget</i> .....	23
2.3 PROJECT MANAGEMENT.....	24
2.3.1 <i>The Project Management Group (PMG)</i> .....	24
2.3.2 <i>The ICEIDA Technical Assistance (TA)</i> .....	26
<b>3 PROGRESS OF THE PROJECT.....</b>	<b>26</b>
3.1 STUDY GRANTS AND SCHOLARSHIPS .....	26
3.2 STAFF DEVELOPMENT.....	27
3.2.1 <i>Research activities by staff and students</i> .....	28
3.3 LIBRARY SUPPORT.....	30
3.4 FINANCIAL ISSUES .....	30
<b>4 PROJECT ANALYSIS.....</b>	<b>33</b>
4.1 EFFICIENCY .....	33
4.2 EFFECTIVENESS.....	34
4.3 IMPACT OF THE PROJECT .....	36
4.4 RELEVANCE OF THE PROJECT .....	37
4.5 SUSTAINABILITY OF THE PROJECT .....	39
<b>5 CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>39</b>
5.1 OUTCOME OF THE PROJECT.....	39
5.2 WEAKNESSES OF THE PROJECT .....	41
5.3 RECOMMENDATIONS .....	43
<b>APPENDIX 1: TERMS OF REFERENCE FOR THE EVALUATION .....</b>	<b>45</b>
<b>APPENDIX 2: ITINERARY FOR THE EVALUATION TEAM.....</b>	<b>52</b>
<b>APPENDIX 3: LIST OF PERSONS CONSULTED AND INTERVIEWED.....</b>	<b>54</b>

<b>APPENDIX 4: LIST OF DOCUMENTS AND REFERENCES .....</b>	<b>56</b>
<b>APPENDIX 5: PROJECT DOCUMENT .....</b>	<b>59</b>
<b>APPENDIX 6: PROJECT PLAN.....</b>	<b>60</b>

## LIST OF FIGURES

Figure 1: Aquaculture development in Malawi from 1995-2002 (source: Malawi Fisheries Department-Annual Report).....	11
Figure 2: A visit by the evaluation team to a Malawian farm with integrated aquaculture. Experimental nets from BCA are seen in the pond. A pond of this size can produce about 500 kg of fish. ....	12
Figure 3: Development of total catch in inland fisheries and of aquaculture production for selected SADC countries in 1980-2000 (see table 1 and table 2 for the countries). The grey broken line represents aquaculture production excluding seaweed production (Source: FAO stats 2002) .....	14

## LIST OF TABLES

Table 1: Total catch for inland fisheries (tons) in selected SADC countries during the period from 1980-2000. Data from Botswana, Angola and Lesotho was available (Source: FAO stats 2002).....	13
Table 2: Aquaculture production (tons) in selected SADC countries in 1980-2000. Data from Botswana and Angola was not available. (Source: FAO stats 2002).....	13
Table 3: The training needs in aquaculture in the SADC region in late 1990s. Numbers represent the training needs per year .....	15
Table 4: Number of undergraduate students trained to Diploma and BSc in Agriculture with Aquaculture Option from 1993-1999 .....	16
Table 5: Staff situation of the Aquaculture and Fisheries Science Department in 1999 ..	18
Table 6: Estimated cost of each scholarship per year (BSc and MSc) and the study grant per student. The cost is presented in both MK and USD.....	23
Table 7: Estimated total cost per year of the scholarships and the study grants for 2000-2005. The cost is presented in both MK and USD .....	23
Table 8: Estimated cost of staff development in USD for 2000-2005. The last years cost of a training of a staff member from previous project is also included. ....	24
Table 9: Estimated cost of the library support for 2000-2004 in USD.....	24
Table 10: Estimated cost of teaching by the ICEIDA expert and also the local teaching staff fro 2000-2006 .....	24
Table 11: The number of students supported by ICEIDA in 2000-2005.....	27
Table 12: SADC countries represented and the number of students from each country by program in the AFSD in 2000-2005 .....	27
Table 13: The staff at the AFSD and their academic qualifications in 2003 .....	28

# 1 INTRODUCTION

Cooperation between Malawi and Iceland dates back to late 1980s and for the past several years Malawi has received a significant share of the Icelandic international development aid. The Icelandic International Development Agency (ICEIDA) has been responsible for organizing projects funded by the development aid. The cooperation between ICEIDA and Bunda College of Agriculture (BCA) began in 1993 with support to the development of aquaculture training at BCA. A new support contract for the project “***Support to the Regional Aquaculture Training Program at Bunda College of Agriculture 2000-2005***” was signed by ICEIDA and BCA in 2000.

The main objective of the project is to **create a centre of excellence in training and research in aquaculture and fisheries science in Malawi and the SADC region.**

This objective is in accordance with the vision of the BCA, which is: “...*to advance and promote knowledge, skills and self-reliance for:*

- *sustainable food production and utilisation*
- *improving income, food security and nutrition of the rural and urban populations, and*
- *conservation and management of biodiversity, natural resources and environment through the provision of information services, teaching and training, research, outreach and consultancy in response to national and international needs.”*

In September 2003 ICEIDA requested a formal evaluation of the project and an external evaluation team was formed and a Terms of Reference (ToR) for the evaluation team created (App. 1). The main focus and the scope of the evaluation is to provide information for decision-makers, and also to be a learning tool for the stakeholders to improve future policy and interventions. In general, the evaluation should;

- ✓ evaluate the goals and purposes of the project and determine to what extent the goals have been achieved;
- ✓ evaluate inputs and outputs and financial management of the project
- ✓ consider unintended outcomes of the project;
- ✓ evaluate the impact for the beneficiaries (BCA, the students, other countries in SADC), or how it can be measured in the future if not obvious yet;
- ✓ provide a description of major constraints and risk factors for the project implementation;
- ✓ assess the degree of the project’s sustainability;
- ✓ provide a description of lessons learned in relation to future programme implementation;
- ✓ give recommendations on future modifications and improvements in light of the above listed objectives.

The team leader is *Mr. Thor Asgeirsson* (M.Sc. and M.Ed.) deputy director of the United Nations University-Fisheries Training Programme in Iceland. Other team members are; *Dr. Chareles Masongano* from the Rural Development Department at Bunda College of Agriculture and *Dr. Stanley Khaila*, director of Agricultural Policy Research Unit (APRU) at Bunda College of Agriculture.

## **1.1 Plan of Work and Methodology**

The evaluation team gathered information regarding the project during a 2 week period in November 2003. Mr. Asgeirsson met with the Malawian counterparts on November 3 at Bunda College where the evaluation strategy was discussed and an itinerary, which was prepared by Mr. Gudni Eiriksson, the project officer, and Dr. Masangano, approved (App. 2). Information was gathered through:

- a) Review of documents (contracts, reports and other material concerning the ICEIDA and BCA cooperation) directly and indirectly related to the project (App. 3)
- b) Meetings with individuals directly related to the project, such as members of the Project Management Group (PMG), students, staff at BCA-AFSD, BCA administrative staff, ICEIDA country director and the project officer (App 7)
- c) Meetings with individuals and organizations indirectly related to the project, such as Department of Fisheries, Developmental Agencies that have been supporting BCA and aquaculture farmers (App. 3).
- d) Site visits (App. 3)

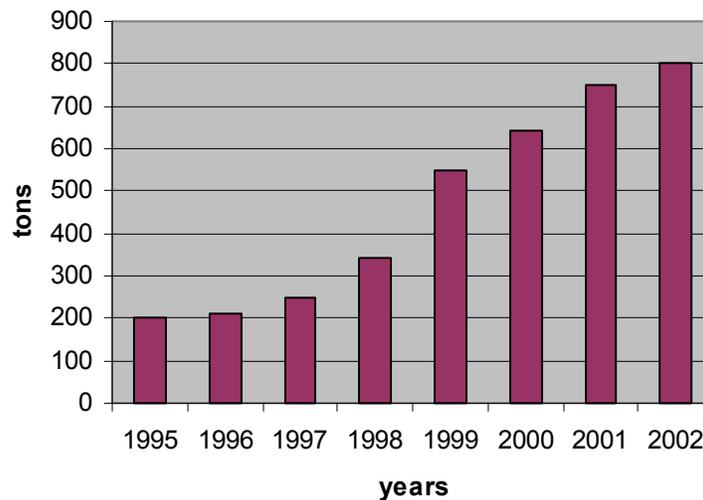
Most of the times all members of the evaluation team were present at these meetings and the team members discussed daily their experience from the meetings and reviewed and discussed relevant documents. Early on the team leader drafted an outline of the report and soon there after the team members started drafting individual chapters of the report. Initially the evaluation team was to present a draft report, conclusions and recommendations to the PMG, but due to a busy schedule of some the PMG members it was not possible to hold such meeting. Instead the draft report was given to the project manager, Mr. Gudni Eiriksson, at the end of the evaluation period in Malawi.

## **1.2 Fisheries and Aquaculture in Malawi and SADC region**

### ***1.2.1 Malawi***

Inland fisheries in Malawi have steadily decreased for the past 10 years. In 1990 Malawian total catch was between 70000 and 80000 tons and in 2001 the catch was just about 50000 tons with 60-70% of the catch coming from Lake Malawi and about 20% from Lake Chilwa (table 1). This reduction in the fisheries has had severe effects on the food availability for the Malawian population which has an annual growth rate of 3-4%. This reduction in catch is mainly due to the dwindling stocks in Lake Malawi. At the same time the fish stocks in Lake Malawi have been dwindling, the number of fishermen, fishing gear and boats have increased considerably. When it comes to generating animal protein, aquaculture can be an alternative to the dwindling fisheries. Before 1980 aquaculture in Malawi was negligible, but its history dates back to the beginning of the 20<sup>th</sup> century. In 1958 the aquaculture production was estimated to be about one ton and for the past 20 years the production has gone from 200 tons to about 800 (table 2 and figure 1). Obviously this increase is not enough to compensate for the reduction in fish availability, but when comparing these results with the aquaculture production goals in the Poverty Reduction Strategic Plan, which is to produce 1000 tons in year 2005 through

aquaculture, one can argue that Malawi is on the right track in terms of aquaculture development.



**Figure 1: Aquaculture development in Malawi from 1995-2002 (source: Malawi Fisheries Department-Annual Report 2002)**

Today there are about 2000-3000 aquaculture farms or farms that have integrated traditional farming and ponds aquaculture but it is expected that through the HIPC (Highly Indebted Poor Countries) project that up to 5000 small scale farmers will be integrating aquaculture in their farming. If the goals are reached the average farm will produce about 200 kg of fish per year.

The main species being cultured are; tilapia species (*Oreochromis shiranus*, *O.karongae*, *Tilapia rendalli*) locally known as “makumba”, “chambo” and “chilunguni” ; and African catfish, *Claris geriepinus*, locally “mlamba”. The difficulties these farmers encounter in cultivating these species are manily:

1. Inadequate knowledge by fish farmers and extension staff in small scale fish farming
2. Low capital among the people targeted
3. Inadequate fingerling production in the country
4. Use of slow growing fish species
5. Inadequate pond management resulting in high predation in the ponds
6. Apparent slow growth in farmed fish
7. Brood stock deterioration leading to lower quality of eggs and lower number of offspring

A visit by the evaluation team to a farmer (figure 2) that has integrated aquaculture into his regular farm life gave an insight into the problems that these farmers are dealing with. This farmer has been in cooperation with students and staff of the AFSD at Bunda College and received advice on how he should operate his aquaculture. On his farm a good example could be seen how different parts of cultivation (whether it was fish,

livestock or crop) can support each other, where the water in the ponds was used for irrigation and the waste from the livestock was used to enrich the ponds of organic matters (chemicals). In a discussion with a farmer it was pointed out that knowledge submitted to one farmer will be transferred to another. It was also suggested that the extension support might come through cooperation with a group of farmers (model farms) in an area. If the aquaculture succeeds in an area then it might inspire other farmers. Another idea was that farmers form a cooperative in maintaining a brood stock so their brood stock can be regenerated and thus maintained normal productivity.



**Figure 2: A visit by the evaluation team to a Malawian farm with integrated aquaculture. Experimental nets from BCA are seen in the pond. A pond of this size can produce about 400-500 kg of fish.**

### ***1.2.2 SADC region***

In the SADC region similar trends, as in Malawi, in terms of inland fisheries, can be seen. Fisheries in the sub-Sahara countries have changed somewhat for the past 20 years. In the 1980s the inland waters fisheries in the SADC region increased but since 1990 the catch has reduced, especially in the countries where inland fisheries have been extensive (table 1). The regional students attending the DAFS at BCA have mainly been from the countries shown in table 1 and 2. The catch reduction is clearly evident in Malawi, Tanzania and Zimbabwe where the catch has reduced 20-45 %. The combined catch in these countries has decreased 18% from 1990 to 2000.

**Table 1: Total catch for inland fisheries (tons) in selected SADC countries during the period from 1980-2000. Data from Botswana, Angola and Lesotho was unavailable (Source: FAO stats 2002)**

Country\Year	1980	1985	1990	1995	2000
Malawi	65694	61892	75025	54614	43200
Zambia	50988	68000	68268	82190	85900
Tanzania	189.900	257.883	358.956	317.944	281.302
Mozambique	3500	3500	7500	8114	13806
Zimbabwe	13213	17260	25607	16463	13114
Botswana					
Angola					
Lesotho					
<b>Total</b>	<b>323295</b>	<b>408535</b>	<b>535356</b>	<b>479325</b>	<b>437322</b>

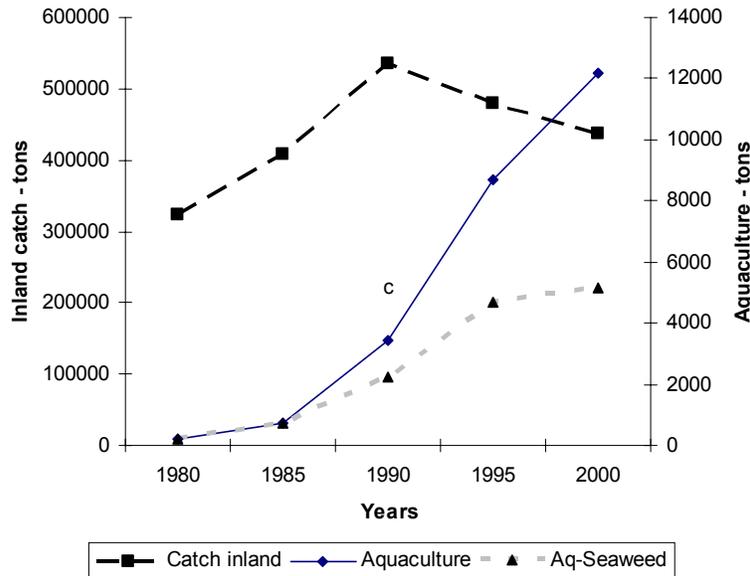
Table 2 shows the development in aquaculture production for Malawi and the regional countries. Since 1980 the aquaculture production has increased in four of the countries but in the Lesotho and Mozambique the aquaculture production has been very little. No information was available from Botswana and Angola. From 1980 to 2000 the total aquaculture production increased from around 200 tons to over 12000 tons in 2000. The increase has been the greatest in Tanzania and Zambia where their combined production in 2000 was about 11500 tons (table 2). A note has to be taken regarding the production in Tanzania where most of the production is seaweed, not fish. An argument can be made for that only Zambia has made progress in developing aquaculture. One might ask why aquaculture has not improved more in Malawi especially since SADC amended Malawi and BCA as a center country/institute for developing aquaculture and to provide training for the SADC region over 10 years ago.

**Table 2: Aquaculture production (tons) in selected SADC countries in 1980-2000. Data from Botswana and Angola was not available. (Source: FAO stats 2002)**

Country\Year	1980	1985	1990	1995	2000
Malawi	70	180	197	226	530
Zambia	27	363	1460	4081	4240
Tanzania	0	21	1575	4200	7210
Mozambique	0	0	20	37	0
Zimbabwe	75	140	157	150	185
Lesotho	23	23	20	14	8
Botswana					
Angola					
<b>Total</b>	<b>195</b>	<b>727</b>	<b>3429</b>	<b>8708</b>	<b>12173</b>

Figure 2 compares the developmental trends in inland fisheries and aquaculture in the countries that have had students at the DAFS at Bunda College. The numbers presented in this report are all official numbers from the countries. The reliability of these number can however be questioned. Some reports indicate that the official production numbers

(from DoF) underestimate the production because not all farmers are registered as aquaculture farmers. A new report from Andrew *et al.* (2003) indicates, however, that these production figures highly overestimate the production, which should be around 100 tons instead of 800 tons. It is clear that aquaculture has a long way to go for the production to compensate for the decline in fish catch since 1990 especially if only fish production is considered.



**Figure 3: Development of total catch in inland fisheries and of aquaculture production for selected SADC countries in 1980-2000 (see table 1 and table 2 for the countries). The grey broken line represents aquaculture production excluding seaweed production (Source: FAO stats 2002)**

### 1.3 Training needs in the SADC region

During the time when SADC was looking into the possibility of promoting aquaculture as a viable option for local farmers in the region the training need in aquaculture was assessed. Table 3 shows the training need at that time (late 90s) but since then the need might have changed. The evaluation team did not have access to more recent information on the training needs. There is a high demand for certificate and diploma holders in aquaculture and there is also a demand for BSc degree holders. The low demands for PhD holders indicate that the level of the aquaculture is not high and there are other issues of greater concern than developing top of the line research activities. The need for PhD holders in Malawi reflects the plan of developing Malawi as the regional training center in Aquaculture.

There are many ways to meet these training needs. One way is to tackle directly the area where the most training is needed, i.e. at certificate and diploma level. This could solve immediate problems. Another way is to train at top level, i.e. for BSc, MSc and a PhD level, and have the local people convey their knowledge to the people at certificate and diploma level. Training one person for a MSc might then affect 10 other seeking

diplomas, which later these 10 diploma holders might affect 100 farmers. The method might be more sustainable for Malawi but more time consuming and will therefore not solve problems immediately.

**Table 3: The training needs in aquaculture in the SADC region in late 1990s. Numbers represent the training needs per year**

	Zim	Les	Mal	Nam	Tanz	Zam	Total
Certificate in aquaculture	2	-	5	5	2	5	19
Diploma in aquaculture	5	5	5	-	7	5	27
B.Sc. in aquaculture	5	2	2	-	7	5	21
M.Sc. in aquaculture	2	2	2	-	4	5	15
Ph.D. in aquaculture	2	-	-	-	-	-	2
Extension	-	-	2	-	-	-	2
Social Economics	-	-	2	-	-	-	2
Policy and planning	-	-	2	-	-	-	2
Short courses in various areas							20

#### 1.4 Background of Aquaculture Training at BCA

Aquaculture and Fisheries Science Department is one of the 9 departments at Bunda College of Agriculture, a constituent college of the University of Malawi. The department belongs to the Faculty of Environmental Sciences. It currently has 8 lecturers and another 4 lecturers are on study leave.

Aquaculture at Bunda College of Agriculture started between 1965 to 1967 with the construction of a dam, eight fishponds and circular breeding tanks of 20 m<sup>2</sup>. Three of the fishponds were 0.2 ha each while the other five were 0.08 ha each. The dam and the ponds were stocked with *Oreochromis spp.* Initially these facilities belonged to the College Farm, which at that time was regarded as a teaching farm. The dam and fishponds were handed over to the Animal Science Department in 1981 when it was decided that the farm be designated as commercial farm. Twelve additional ponds were added to the facility in 1985-86 through an MSc. project followed by 18 concrete tanks of 3-6m<sup>2</sup> with funding by a University of Maryland project. Additional 21 medium sized research ponds of 200m<sup>2</sup> were constructed between 1991 and 1993 through a research co-operation between ICLAM and the University of Malawi. With the construction of the dam and fishponds, the college recruited a fisheries technician who later underwent the BSc in agriculture and MSc training at Bunda College and Chancellor College respectively. The staff member was later in the early 1990s sent for PhD training at Penn State University. With the training, the staff member became a faculty member in the Animal Science Department.

### 1.4.1 Curriculum Developments

With these facilities, teaching in aquaculture has been part and parcel of the agriculture curriculum at Bunda College since 1974. Initially, teaching in aquaculture was integrated in some animal science courses until in 1978 when one course was introduced in the curriculum. In 1993, ACCC and SADC identified training needs in the area of fisheries and aquaculture in the SADC region and Bunda College was identified as the appropriate institution for providing the training. The reasons for choosing Bunda College were that the college had shown interest and had the basic infrastructure for providing training in aquaculture and fisheries science. The aquaculture programme was therefore further developed into an option under the diploma/degree in agriculture programme in 1993. This was done with the assistance of Pennsylvania State University and the University of Maryland. The diploma programme was for three years and students who performed very well were allowed to proceed for another two years and were awarded a BSc in agriculture with aquaculture option.

The diploma programme in the department was however phased out in 2000 in accordance with college policy to phase out all diploma programmes. In fact, the college phased out diploma programmes in all options in 1998 and the diploma in agriculture with option in aquaculture was allowed to continue for two more years in order to satisfy regional demands from SADC. The diploma programmes were phased out for two main reasons. The first reason was to allow the college to concentrate on BSc and postgraduate programmes and therefore be more efficient. Secondly, phasing out of the diploma programme allowed the college to reduce the time for the BSc programme from five years to four years.

The four-year BSc in agriculture with aquaculture option was therefore introduced in 1996, the year when the four-year programme was introduced in all other option at Bunda College.

### 1.4.2 Number of Students in the Programme

A total of 58 diploma students and 51 BSc students completed their study programmes in the aquaculture option between 1993 and 1999. Table 4 below shows the number of undergraduate students trained by the Department from 1993 to 1999.

**Table 4: Number of undergraduate students trained to Diploma and BSc in Agriculture with Aquaculture Option from 1993-1999**

Type of certificate achieved	Full Scholarships		Study Grants	Total
	Malawian	Regional subscription students	Malawians	
Diploma	19	12	27	58
BSc.	7	9	35	51
Sub-Total	26	21	62	109

Most of the employers of graduates from the programme were however concerned with the BSc in agriculture (aquaculture option). They felt that this was not the right qualification for the type of employees they were looking for. The department responded by developing a curriculum for BSc. in aquaculture and fisheries science. This occurred at almost the same time when the Animal Science Department submitted a proposal for the establishment of the Aquaculture and Fisheries Department. The University approved this proposal in 1999 and the Aquaculture and Fisheries Science Department became the seventh department in the Faculty of Agriculture with a mandate to teach courses in aquaculture and fisheries science. Its vision statement is "to created a centre of excellence in training and research in aquaculture and fisheries science in Malawi". The AFSD was later moved to the Faculty of Environmental Sciences, which was established in 2000.

The Department of Aquaculture and Fisheries Science also offers an MSc programme in aquaculture and fisheries science. The programme started in 2001 and currently there are nine students of which four are Malawians while five are from other SADC countries; two from Uganda, two from Zambia and one from Mozambique. Of the nine MSc students, three will graduate in May 2004. Five of these students are supported with full scholarships from ICEIDA, two receive support from Penn State University and one (Mozambican) receives  $\frac{3}{4}$  support from ICEIDA and  $\frac{1}{4}$  support from the World Fisheries Center in Domasi.

### ***1.4.3 Staff Developments***

Staff in the Aquaculture and Fisheries Science Department has increased from one technician in the early 70s to more than eight faculty members. The one technician who was recruited in the early 70s underwent undergraduate studies from 1978 to 1983 at Bunda College. He obtained a BSc. in Agriculture in 1983. Thereafter he did his MSc. studies in fisheries science at Chancellor College, another constituent college of the University of Malawi. After his MSc studies, he became a faculty member in the Animal Science Department. The staff member was in the early 90s sent for PhD training at Penn State University in the United States.

The College recruited another lecturer in aquaculture and fisheries science in 1994 with support from ICEIDA. This was in order to support the increased teaching load following the increased number of courses, which occurred when the aquaculture options were introduced at diploma and BSc levels. This staff member was later sent for PhD studies in South Africa in the mid 90s.

The College continued to increase its staff establishment and recruitment in aquaculture and fisheries science such that by 1999, the Department had 5 members of staff as shown in table 5. The Department also had some technical assistants from JICA.

**Table 5: Staff situation of the Aquaculture and Fisheries Science Department in 1999**

<b>Name of Staff Member</b>	<b>Qualifications</b>	<b>Post</b>	<b>Area of Specialisation</b>
Dr. J. S. Likongwe	PhD	Senior Lecturer	Aquaculture and fisheries science
Mr. E. Kaunda	MSc (PhD)	Senior Lecturer	Fisheries Ecologist
Mr. G. Matiya	MSc.	Lecturer	Aquaculture Economics
Mr. J. Kang'ombe	MSc.	Lecturer	Fish Nutrition
Mr. D. C. Sikawa	MSc.	Lecturer	Aquaculture Systems

#### ***1.4.4 ICEIDA Support in the 1994-99 Period***

The aquaculture programme at Bunda College started receiving phase 1 support from the Icelandic International Development Agency (ICEIDA) from 1994 to 1999. In this phase, ICEIDA supported several components of the programme including student scholarships, staff development, teaching support and library support. As table 4 shows, ICEIDA supported a total of 58 diploma students and 51 BSc students. Twenty-six Malawian students and 21 regional students were supported with a full scholarship while 62 Malawian students were supported with study grants. The scholarship support covered the cost of tuition, board and lodging and the following allowances; settling, personal, holiday, stationery, book and medical while the study grants covered personal, stationery and book allowances. On staff development, ICEIDA provided one scholarship for PhD studies for Dr. E. Kaunda who completed his PhD at Rhodes University in South Africa in 2000. The project also provided teaching support by providing a salary for one lecturer and supported the purchase of some books and subscriptions to periodicals on aquaculture for the library.

#### ***1.4.5 JICA and Japanese Government Support to the Aquaculture and Fisheries Science Department***

The regional nature of the programme and the support by ICEIDA attracted the interest of other donors to support the programme. One such donor was JICA who provided technical assistance support by providing one specialist who assisted in teaching some of the courses. In addition to this support, the Japanese Government provided funds for the construction of offices and teaching facilities, which included a lecture theatre, lecture rooms, a conference room, a computer laboratory with computers and other laboratories both on campus and at the fish farm. JICA also provided two vehicles to the department which include a minibus and a pick-up. All the laboratories were provided together with the associated equipment.

#### ***1.4.6 Support by CIDA***

The Canadian International Development Agency (CIDA) has also a long history of collaboration and assistance to the Department. CIDA support has been through collaboration with University of Saskatchewan (SIAST) until 1998 who supported the curriculum development process, staff training and provision of one vehicle (a pajero). After 1998 the support has been through cooperation with the Memorial University in a project called MI and a few Canadian students have undergone practical training at Bunda.

#### ***1.4.7 Support by ICLARM***

The International Centre for Living Aquatic Resource Management (ICLARM) was another active collaborator with staff of the department. Collaboration with ICLARM was basically in research on aquaculture and fisheries. This collaboration resulted in construction of additional 21 fish ponds.

#### ***1.4.8 Support by NORAD***

The Government of Norway has through NORAD been providing support to Bunda College since December 1998. Currently the support aims at improving the managerial performance and teaching competence of Bunda College. Being a College wide project, each of the nine departments have benefited from this support. The Aquaculture and Fisheries Science Department was assisted with

- Funds to develop its five year strategic plan
- Funds to conduct one collaborative research project on “**biodiversity of fishes of Lower Shire in Malawi**”.
- One computer in the Department and
- Some equipment repairs.

## **2 THE PROJECT 2000-2005**

At the end of the support period from 1993-1999 a desire was expressed through a dialogue between ICEIDA and other donors to strengthen the aquaculture section by moving it from being under the Animal Science Department to become a separate department. At similar time the 5 year diploma/degree program was phased out and in 1996 the first students started (second year entree-mature entree) in the 4 year BSc (Agriculture/Aquaculture option degree) program (graduated in 1999). The Aquaculture and Fisheries Science Department was established in January 1999 with five teaching positions, which were all filled in early 2000. The department could then offer a BSc degree in Aquaculture. Based on the analysis of *Strength, Weaknesses and Opportunities* of the AFSD (see Project Document in appendix 5) it was proposed that the focus of the “new” project should be:

1. provision of full scholarships for BSc undergraduate program
2. provision of study grants for BSc students
3. provision for scholarship for MSc postgraduate program
4. staff development
5. teaching assistance and technical assistance
6. support on information/library material
7. general support

## 2.1 Objectives of the Project

The main objective of the project is to:

Create a centre of excellence in training and research in aquaculture and fisheries science in Malawi and the SADC region.

The objective is to be reached through the more specific objectives:

4. to deliver an effective and top quality courses in fisheries and aquaculture science
5. to increase awareness of the program in the SADC region
6. to enhance capability in carrying out cutting-edge research in demand driven research areas

## 2.2 Project description

A description of the project and the responsibility of each part was written and presented in a *Plan of Operation* (appendix 6). This document was then signed by both contracting parties on July 17 2000.

The agreement stipulates that ICEIDA should:

- Provide up to **10 scholarships** divided among BSc and MSc students from Malawi, the SADC region and developing countries in sub-Saharan Africa. This support will provide for three new intakes of students in 2000-2002 for three years until they receive their BSc degree (three Malawians and three regional students per year). Scholarships for four new intakes for the MSc studies per year for three years (2000-2003) should be provided with 50% scholarships allocated to regional students. In line with ICEIDA policy of empowering women, at least 40% of the scholarship should be offered to female students, and women should be encouraged to apply for the program. Deviations from academic performance are subjected to specialized actions stipulated in the *Project Document*.
- Provide up to **10 study grants** per year for BSc students from Malawi for three years (2000-2002). The study grant will follow the students until he/she finish the degree. Deviations from academic performance are subjected to specialized actions stipulated in the *Project Document*.
- Provide **support to one BCA staff member** for MSc studies and a support to one staff member for Ph.D. studies in the SADC region or in any developing country
- Provide **support to the Aquaculture section of the BCA library**. The support is meant for subscription to NISC and ASFA CD-Rom databases as well as purchasing of textbooks for staff members and relevant literature for the library.

- Provide **support** for locally sourced **teaching support**. The teaching support is for part-time lecturers in specialized fields amounting in total to an equivalent of one lecturer's salary each year for three years during the period 2000-2005
- Provide **technical assistance (ICEIDA expert)** to the Aquaculture and Fisheries Science Department (AFSD) for two years. This is intended to bridge the gap created in the staff while staff members are in training and also to strengthen the professional capacity of the department.
- Pay rent for residential house occupied by ICEIDA expert, if applicable.
- Be in charge, unless otherwise agreed, of procurement and the delivery of commodities to Malawi.
- Cover all the cost, unless otherwise agreed, of each consignment of the commodities. All cost should be paid from the same source of funding as the commodities.

On the other hand BCA should:

- Provide necessary staff for the BCA-AFSD as required by the project.
- Provide counterpart(s) staff for the ICEIDA expert.
- Provide administrative support to the implementation of the project as needed.
- Be in charge of recruitment of students to the BCA –AFSD in collaboration with ICEIDA.
- Provide substantial details of cost factors to be covered by ICEIDA support and as needed by the project.
- Provide acceptable housing for the ICEIDA expert on BCA campus
- Facilitate, unless otherwise agreed, the prompt issuing, free of charge, of necessary import licenses and other permits on importation of the commodities.
- Facilitate, unless otherwise agreed, the exemption of the commodities from all custom duties, taxes and other related charges and prohibition pertaining to their entry into Malawi and, where appropriate, their subsequent re-export.

Regarding the **ownership of commodities**, including project vehicles, it is stated that they should become and remain the property of the AFSD at the end of the project.

Regarding the **management, administration and reporting** of the project it is stated that:

- The contracting parties should cooperate in the implementation of the project.
- ICEIDA should appoint a Project Officer to be responsible for the day-to-day implementation of the project on behalf of ICEIDA. The Head of AFSD should be the counterpart of the Project Officer on behalf of BCA.
- A Project Management Group (PGM) should be established with defined ToR for the implementation of the project.
- PGM should prepare a project budget no later than one month prior to the beginning of each academic year. The budget should be mutually agreed upon by contracting parties.
- An annual narrative and financial report should be prepared by the PMG and the end of each financial year, and presented to the contracting parties for approval.

- A final narrative and financial report shall be given to the contracting parties before June 30<sup>th</sup> 2005 for approval.
- The financial year will be the calendar year.

Regarding the **evaluation** of the project. If the contracting parties agree, an independent evaluation will be carried out during the final year of the project. The project may be extended or terminated based on recommendation of the evaluation

A detailed description of the implementation of the project is provided in the *Project Document* (Appendix 5)

### ***2.2.1 Selection of Malawian and regional ICEIDA supported students***

At BCA the first year of the four years study towards a BSc degree is common to all students. Students enter the area of specialization in their second year and from then on the students will be under the supervision of the departments. During the first three years of the project (2000-2002) students opting for the AFSD did not have to specify which department (speciality) they intended to pursue. This was mainly due to the fact that the department was not introduced to the continuing students coming from the secondary school. The specialty selection was then done at the end of the first year. For the 2003 intake the department was introduced to the prospective students so the students could select their field of study on their application that gave the departments more time to prepare the new intake of students and to organize the activities and staff better. Student with a diploma will enter the second year, so-called mature entry.

The selection criteria for ICEIDA supported students in the AFSD is specified in the *Project document*. The main guidelines are the following:

1. Students shall comply with the general academic requirements of the BCA. The granting of scholarships will consider the highest academic qualifications and ICEIDA gives a final approval of applicants/recipients.
2. 50% of the ICEIDA BSc and MSc scholarships shall be offered to students from countries outside Malawi, either from the SADC region or other developing countries in the sub-Sahara Africa. If the number of non-Malawian students is not sufficient to fulfill the requirements on the distribution of the scholarship then the scholarships intended for non-Malawians can be given to Malawians.
3. In line with ICEIDA policy of improving status of women, 40% of the scholarships shall be granted to women applicants. BCA is committed to promote the ICEIDA view to prospected female applicant, both Malawian and non-Malawian.
4. The study grants are only for Malawian students and the selection shall follow the same guidelines as set in paragraph 1-3.
5. Students might loose their right to a scholarship is they don't comply with BCA academic standards
6. Students that for unforeseeable reason and un-controllable situation cannot comply with academic standard of BCA can be considered for continued support

by ICEIDA. This will be evaluated on a case-to-case basis in collaboration of ICEIDA and BCA.

### 2.2.2 Project Budget

A budget plan for the project was created and presented in the *Project Document* (see appendix 5). The main cost factors are presented in this section but a breakdown of cost factors are presented in the *Project Document*. The figures are presented in Malawian Kwacha (MK) and in USD for comparison but the cost components, where the payment is made outside Malawi are quoted in US dollars (e.g. staff development and library support). It has to be kept in mind that the Malawian currency is very unstable and the inflation during the project period might be in the range of 20-50% per year.

Table 6 show the cost of each scholarship per year for both BSc and an MSc students and for the study grant. In addition the students receive one-time settling allowance of 2500 MK for the BSc scholarships and 5000 MK for the MSc scholarships. All supported students should also receive money for their research; 10,000 MK for the fourth year BSc students and 100,000 MK for the MSc students. The regional students also receive travel allowance of 1000 US\$ (air ticket). Table 7 shows the estimated cost for the student support for the project period. The numbers in Table 7 include the one-time cost, which are not included in table 6.

**Table 6: Estimated cost of each scholarship per year (BSc and MSc) and the study grant per student. The cost is presented in both MK and for comparison in USD**

	Malawian student		SADC student	
	MK	US\$	MK	US\$
<b>BSc (3 years)</b>	61600	1232	118600	2372
<b>Study Grant (3 years)</b>	27500	550	N/A	N/A
<b>MSc (2 years)</b>	141100	2822	141100	2822

**Table 7: Estimated total cost per year of the scholarships and the study grants for 2000-2005. The cost is presented in both MK and for comparison in USD**

	2000	2001	2002	2003	2004	2005	Total
<b>BSc+Attachments (MK)</b>	918400	1922300	2189800	1936500	1245900	420300	<b>8633200</b>
<b>US\$</b>	18365	38446	43796	38730	24918	8406	<b>172661</b>
<b>Study grants (MK)</b>	178750	525000	828750	787500	512500	137500	<b>2970000</b>
<b>US\$</b>	3573	10500	16175	15750	10250	2750	<b>58998</b>
<b>MSc (MK)</b>	352200	1216600	1749300	1396600	532200		<b>5246900</b>
<b>US\$</b>	7044	24332	34976	27932	10644		<b>104928</b>

In table 8 the estimated cost of the staff development is given in USD. In 2000 the support is used for the remaining cost of the training of one staff member (Dr. Kaunda) which began his training during the previous support period.

**Table 8: Estimated cost of staff development in USD for 2000-2005. The last years training cost of a staff member from previous project is also included.**

	2000	2001	2002	2003	2004
MSc		20000	15000		
PhD			15000	10000	15000
PhD (finalization)	6000				
<b>Total</b>	<b>6000</b>	<b>20000</b>	<b>30000</b>	<b>10000</b>	<b>15000</b>

Table 9 gives an estimated cost for the library. The use of the money is specified where certain amount should be used for subscription of journals and CD-Rom and books

**Table 9: Estimated cost of the library support for 2000-2004 in USD.**

	2000	2001	2002	2003	2004
Subscription	1000	2000	2000	2000	1000
Journals					
CD-Rom	1000	2000	2000	2000	1000
Books for Library	1000	2000	2000	2000	1000
<b>Total</b>	<b>3000</b>	<b>6000</b>	<b>6000</b>	<b>6000</b>	<b>3000</b>

Table 10 shows the estimated cost of the technical and teaching support. Note that according to the *Project Document* the technical assistance is planned to be two years, but in 2002 contract of the technical assistant was extended for another two years, until 2004.

**Table 10: Estimated cost of teaching by the ICEIDA expert and also the local teaching staff fro 2000-2006**

	2000	2001	2002	2003	2004
Teaching support	3500	7000	7000	7000	3500
Technical Assistance (TA)	28000	84000	56000	0	0
TA project vehicle and operation	15000	6000	3000	0	0
TA office equipm and oper. cost	5000	1000	1000	0	0
<b>Total</b>	<b>51500</b>	<b>98000</b>	<b>67000</b>	<b>7000</b>	<b>3500</b>

## 2.3 Project Management

### 2.3.1 The Project Management Group (PMG)

A Project Management Group (PMG) was established to manage and monitor the implementation of the project. The PMG is comprised of eight members, five of whom

were senior members from the Management of Bunda College of Agriculture. The terms of reference for the PMG included to meet twice a year, to prepare a prioritised list of student applicants for ICEIDA support, prepare and submit budget for the approval of the Contracting Parties and, in consultation with the Project Officer, prepare and present annual narrative and financial reports and scrutinise the accounts for the project. The composition and Terms of Reference for the PMG are given in Annex 5

The PMG has met five times starting in January 2001. The last meeting before the evaluation was in May 2003. In 2002, the Group had three meetings: one in February, the second in June and the third meeting in November. The Principal of Bunda College of Agriculture (BCA) and the ICEIDA Programme Manager jointly chaired the meetings of the Group. In general the Group met as scheduled and the meetings were well attended. The agendas were quite effective in monitoring the activities of the project. Examination of the contents of minutes reveals that the agendas of the meetings concentrated on sharing information academic activities, staff development, recruitment of students and financial reports. On occasions, the Group discussed changes in the College that had an impact on the project such as when the College increased tuition to be paid by the students. The Group also made decisions concerning the running of the project. In accordance with the terms of reference, the Group also received and approved annual budgets.

In general, when the project was approved by both parties the project budget was approved for the project period (2000-2005) so only variation from the budget needed to be approved by the PMG every year. The preparation of this annual financial budget was in the hands of the PO, which compiled relevant information and thought out necessary changes in relation to inflation. The PO then presented the draft budget to the College Financial Officer (COF) and the Head of the AFSD for comments. Most of the time the comments from the Head and the CFO were few and the Project Officer prepared the budget report and presented it to the PMG.

Furthermore the selection of students into the programme did not follow the recommended procedure. This was due the fact that, apart from the foreign students, the local students joined the department while in second year. In the first year students did not know their department. We have noted that this is changing as students are now encouraged to indicate their preference at the time they apply for admission into the College. For this reason, this year the Department knows already that 15 students have applied for admission 8 of whom are female.

We have also observed that when the Group made decisions, the Project Officer took responsibility in communicating the decisions to affected and interested parties. The use of the PO as a communication channel potentially could create conflicts in the operation of the project especially when the PO is doubling as Technical Assistance at the same time. As may be appreciated, the PO is an ICEIDA staff member whereas the TA is supposed to be a member of staff at BCA reporting to the head of Aquaculture and Fisheries Sciences Department (AFSD). As a note on this observation, ICEIDA country director did not see/observe this as a problem.

### **2.3.2 *The ICEIDA Technical Assistance (TA)***

The Project Document notes that there would be an ICEIDA expert who would be an employee of ICEIDA to carry out duties in accordance with ICEIDA rules and regulations. At the same time this person would be a member of the lecturing staff the AFSD subjected to the same professional responsibilities as other lecturers within the AFSD (in App. 5). The terms of reference also state that this expert could be appointed Project Officer if ICEIDA so wished. And indeed the incumbent TA was also PO.

The team has observed that the incumbent PO/TA performed both of his duties superbly. As a lecturer, he was assigned to teach classes in both the undergraduate and the graduate programme and he got great reviews from students that met with the evaluation team. He supervised 9 undergraduate students and was a major supervisor for two graduate students. He has served on a number of committees of the College such as the Computer Committee, Library Committee and the post-graduate committee. He along with Dr. Kaunda initiated the reprints collection in the College Library which is highly appreciated by the Library staff and students. He shared his ideas with fellow staff and offered technical assistance to farmers.

As a PO he produced minutes for the bi-annual meetings of the PMG. He also prepared budgets in consultation with the CFO and the Head of AFSD. He regularly produced annual narrative and financial reports as well as the bi-annual reports.

As has been observed already, the doubling of roles can potentially create conflicts. As TA the person is supposed to work under and report to the Head of AFSD. On the other hand, as PO the person is an employee of ICEIDA and must provide oversight for the project. The team has observed that there were times when both the administration and the students exploited this double role.

## **3 PROGRESS OF THE PROJECT**

The project started in the academic year 2000/2001 and at this time when the evaluation is conducted the program has completed three academic years and is beginning its fourth. The first intake of MSc students was in 2001.

### **3.1 Study grants and scholarships**

A total of 69 students have been supported through the project, where 56 (81%) are Malawians and 13 come from the SADC region. At the time of evaluation not all MSc scholarships had been used and two MSc scholarships are to be granted next year bringing the total number of supported students to 71. All study grants and scholarships for the BSc course have been granted. It is expected that 8 of the 12 MSc scholarships (full scholarships) will be granted during the project period and one SADC student will receive  $\frac{3}{4}$  support from ICEIDA. Due to a drastic increase in the cost of the MSc studies (tuition and other fees, 100% increase) the PMG had to reduce the number of MSc scholarships by four (see table 11).

**Table 11: The number of students supported by ICEIDA in 2000-2005<sup>1</sup>**

	Malawian students	Regional students	Total
BSc scholarships	23	10	33
BSc study grants	30	0	30
MSc scholarships	3 (+1)	3 (+1)	6
Total	56	13	69

The regional students come from 4 countries with the biggest group from Zambia (table 12)

**Table 12: SADC countries represented and the number of students from each country by program in the AFSD in 2000-2005**

Country	MSc	BSc
Zambia	2	9
Swasiland		1
Uganda	2	
Mozambique	3/4	

The total number of female students sponsored by ICEIDA is 14 with is about 20 % of the total number of supported students. This share of female students is rather low in relation to the ICEIDA policy which aims for 40% share of female students.

The selection of the ICEIDA supported students has not been in concert with what is stipulated in the selection criteria in the *Project Document*. Most of the students that received the BSc scholarship were mature entry students. They were recruited from the Department of Fisheries where they had been working. At the same time it is expected that they will return to the Department of Fisheries after completing the studies. The continuing students received the study grants based on academic qualifications. One or two exceptions have been made to fulfill the ICEIDA policy of female students. The selection of the MSc students has been based on the selection criteria as indicated in the *Project Document*. Although the submission of the study grants did not follow the criteria stipulated in the *Project Documents* it is our view that granting the scholarships to the mature entry students was wisely and efficiently done. The mature entry students are more likely to go back to their former post and usually they are upgraded to higher posts on their return and will therefore be able to put in use the knowledge acquired in the programme.

### **3.2 Staff development**

When ASFD was established a total number of positions were six. One staff member had a PhD degree, four had MSc degree and one BSc degree. Table 10 shows the academic

<sup>1</sup> The numbers in the table include also the contonuing support to students that began studies during the 1993-199 period.

qualifications of the AFSD staff at evaluation. Today there 12 positions which are filled; two staff members with PhD degrees, five with MSc degree and one with a BSc.

**Table 13: The staff at the AFSD and their academic qualifications in 2003. Some staff members are on study leave. Numbers in parenthesis indicate their year of return.**

Name	Acad. Qualifications	Post	Area of Sepcialization
Dr. J.S. Likongwe	PhD-PennState University	Senior Lecturer	Aquaculture and fisheries Science
Dr. E. Kaunda	PhD-Rhodes University	Senior Lecturer	Fisheries Ecology
Mr. W. Jere	MSc-AIT in Thailand	Lecturer	Fish Genetic
Mr. G. Eiriksson	MSc-UI in Iceland	Lecturer	Fish Biology
Mr. A.V. Masukwa	MSc-	Lecturer	Ichthyology and Fisheries Science
Mr. F. Maguza-Tembo	MSc – Norway	Lecturer (contract)	Stock assessment and fisheries management
Mr. A. Mtethiwa	MSc	Lecturer	Freshwater biology/limnology
Mr. J. Valeta	BSc	Staff associate	Aquaculture systems and engineering
Mr. J. Kangombe	MSc	Studying (04) (PhD)	Fish nutrition
Mr. C. Soko	BSc	Studying (05)(MSc)	Fish Physiology
Mr. G. Matiya	MSc	Studying (07) (PhD)	Aquaculture Economics
Mr. D. Shikawa	MSc	Studying (05) (PhD)	Fish production systems

In addition to the current staff situation, two posts are being manned by part time lecturers. Four staff member are in training and three of them seeking PhD degree and one an MSc degree. These staff members will return in 2005 and 2007. ICEIDA has supported three of the staff. Dr. Kaunda, head of the AFSD, returned from training in 2001, Mr. Jere finished his degree this year (2003) and Mr. Shikawa will finish his PhD degree in 2004 and join the AFSD staff in the beginning of the year 2005. It is therefore expected that four staff members will have PhD degree at the beginning of 2005 when the project will finish and at least two in training for their PhD degree. This has to be looked at as a tremendous staff improvement over such a short period of time and will maintain high academic standards in the AFSD in years to come.

### ***3.2.1 Research activities by staff and students***

In order to create an academic institution of excellence an active and stimulating research environment needs to be created. Research activities take place among the staff and also as a part of final projects of the students. The 4<sup>th</sup> year students need to finish a research project for the BSc degree but such research are normally meant to improve scientific research skills most often the novelty of these research projects is limited. On the other

hand, the MSc students need to finish a research project for their degree and that research needs to have a certain degree of novelty. The combining effect of the MSc research projects and the research activities of the staff is there of great importance for the programme. Table 14 gives an incomplete list of research activities of staff and students at AFSD (limited information provided by the department)

**Table 14: Research activities of MSc students and staff of AFSD in November 2003. Project sponsors are indicated in parenthesis.**

<b>Staff</b>	
Dr. Likongwe	Use of riverine fishes to increase the growth of fish in aquaculture (NORAD)
	Biodiversity of the fishes of the Lowe Shire in Malawi (NORAD)
	Use of salinity to increase growth and production of fish in aquaculture
Dr. Kaunda	Age, growth and reproductive aspects of <i>Oreochromis karongae</i> from different ecological zones of Malawi (IFS-Sweden)
	Is failure to enforce management regulation really the cause of the decline of Chambo fisheries? A policy agenda (IFPRI)
	On-farm research in Mpalae village in Dedza district (with other staff members) (CIDA-MI International)
	On-farm research at Freedom gardens in Dowa district (with others) (CIDA-MI International)
Mr. Jere	Replacement of fishmeal with soybean in catfish diet in Mchinji distict (with other staff ) (DoF)
	On-farm research at Freedom gardens in Dowa district (with others) (CIDA-MI International)
<b>Students</b>	
Ndamala	Reproduction, feeding and assessment of the population of Mpasa ( <i>Opsaridium micrlepis</i> ) from Linthipe River (ICEIDA)
Kahwa	The effect of proteins level in brood stock diet on oocyte maturation, fecundity, spawning frequency, and egg quality in <i>Oreocromis shiranus</i>
Donat	Induced oocyte maturation, incubation and development of feeding in farmed sticks of <i>Tailapia rendalli</i> (ICEIDA)
Kapute	Comparative reproduction biology, age and growth of <i>Oreochromis karongae</i> from five ecological zones of Lake Malawi (ICEIDA)
Kapanda	Factors affecting adoption of fish farming and contribution to income: The case of Mchinji RDP in Central Malawi (ICEIDA)
Kamanga	Feeding and teeth development of molluscivorous fish <i>Trematocranus placadon</i> from Lake Malawi (Pen State Univ.-Bilharzia Project)
Pulaizi	Development of a diet for the culture of <i>Trmotracanus placadon</i> , a facultative snail eating fish (Pen State Univ.-Bilharzia Project)

### 3.3 Library support

The BCA library receives support from ICEIDA equivalent to 6000 US\$ per year, or 3000 USD per semester. Every year the library gets a list of books that the AFSD staff recommends that should be bought. The pro-forma invoice is then sent to the ICEIDA office to be paid. During the project period that library has bought 118 titles and 188 volumes indicating that some multiple titles have been acquired. In addition, the library has paid subscription to some databases such as *Fish and Fisheries Worldwide*-CD Rom. A small project was started at the initiative of Mr. Eiriksson, the ICEIDA project officer and Dr. Kaunda, in establishing an Aquaculture and Fisheries Science reprint collection. In relation to that a computer was bought and a student was hired to set up a database for the reprints. At this point over 500 reprints have been entered into the database and staff members of the AFSD are encouraged to contribute their research article collection to the database.

The library has also taken care of the students' book orders. In the beginning, the process of ordering the books was rather ineffective due to various problems such as problems with the supplier, and books prices were in pounds instead of US dollars which exceeded the book allowance of the students and a new book order had to be submitted. For the past few months the book orders have gone smoothly, mainly due to a new supplier and timely orders.

In addition to the ICEIDA support the library has received support from other donors such as NORAD, which has installed top-of-the-line computer system with fiber optics, and donated USD 30000 per year for the past 3-4 year (15000 for subscription of 22 journals and 15000 for books). EU has also supported the library as has the Rockefeller foundation. From the University of Malawi library the BCA library has received support from JICA in the form of computers. The support of ICEIDA to the Aquaculture and Fisheries Science section of the library has attracted projects from other organizations such as FAO. The BCA library is now the second biggest/best in Malawi with one of the strongest section on aquaculture and fisheries sciences in the SADC region. ICEIDA support of USD 6000 per year during the project period is of great significance for the library section on aquaculture and fisheries science. In relation to the NORAD support to the library (15000 USD for books) then the aquaculture and fisheries science section is receiving four to six times more than other departmental section at the library are receiving.

### 3.4 Financial issues

The budget for the project was created in the beginning and can be reviewed in the *Project Document* and some of the key figures can be seen in section 2.2.2. Most of the cost was quoted in Malawian Kwacha (MK) but expenses paid outside Malawi, such as book orders from the library and the cost of staff development, were quoted in USD. For the scholarships the following cost items were considered:

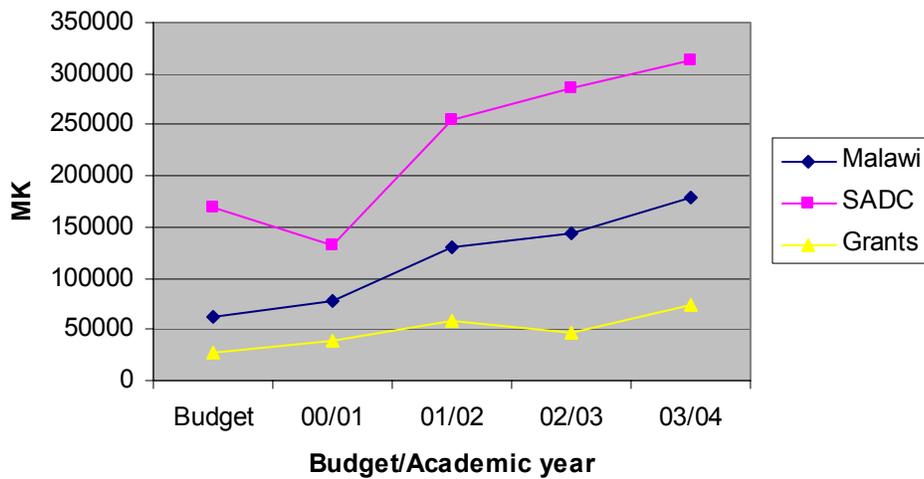
- Tuition, both for Malawian students and student from the SADC region
- Board and Lodging

- Personal Allowance
- Holiday Allowance
- Books and Stationary
- Medical Care
- Settling Allowance (one time)
- Research Allowance (for 4<sup>th</sup> year BSc students and also for the MSc research projects)
- Return Air Ticket (for the SADC region students)

ICEIDA paid the amounts for the scholarships and study grants at the beginning of each semester to the financial office and some of the payments for such as proforma invoices from the library, staff developments and unforeseen costs were paid directly from ICEIDA office.

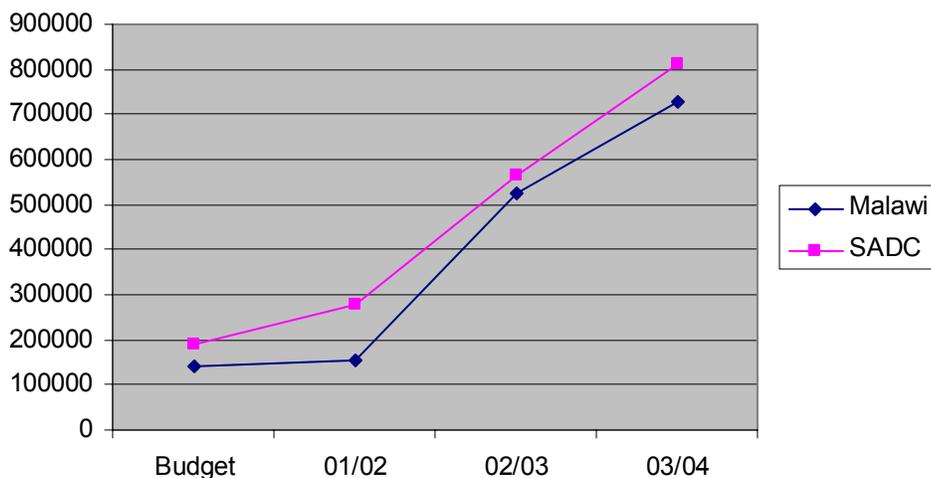
In general the evaluation team was not able to conduct an extensive investigation into the financial matters because the information on financial matters was not readily available during the evaluation period. It can also be said that a total financial audit of the project was outside the scope of the evaluation. Yet a note must be considered about availability of the financial information. The evaluation team soon realized that financial information on the project is kept in several places. Some financial aspect regarding the project manager (mainly salaries) were handled from the ICEIDA head office in Iceland. Record of all financial transaction were kept at the ICEIDA office in Lilongwe but they were not readily available in a summarized form. Financial information on the project can be seen in the biannual reports from Malawi but more breakdown is needed for analysis. Financial officer at Bunda College did not provide us with the financial information which we requested. The project manager provided us with information on scholarships and grants which are used in this report.

Figures 4 and 5 provide information on the average cost of each fellowship and the study grant for the academic years 00/01 to 03/04. The numbers for the 03/04 year are estimated from the cost (multiplied by 2) of the 1<sup>st</sup> semester which was available and the cost of the air ticket (from the year before). After the first year (00/01) the tuition for the Malawian students was increased by 1600 %, from 1500 to 25000 per student. This increase seems to have taken place without discussion with ICEIDA. In order to maintain the same number of scholarships and grants ICEIDA this increase was met by removing the tuition from the study grants and also by dropping the research money for the 4<sup>th</sup> year students. The drop in the cost of scholarships for SADC students in 00/01 might be explained through the cost of return air ticket which was not included in the budget sheet from the project manager. Other changes in the scholarships can be explained through adjustments due to inflation and by small changes in individual cost component which are covered elsewhere in this report.



**Figure 4: The cost of BSc scholarships and study grants for Malawian and regional students for the academic years of the project. For comparison the initial budget as presented in the project document is also shown.**

Since study grants are not offered in the MSc programme only the development of the cost of the MSc scholarships are presented in figure 5. Similar cost components as for the BSc scholarships serve the basis for the MSc scholarships. These components can be reviewed in the *Project Document*. In general the cost of the Malawian MSc students and the regional students should be the same except for the return air ticket which is included in the scholarship to the regional students and explains the difference in figure 5. Other changes that affected the cost of the MSc scholarships are almost a 100 % increase in tuition that took place at the beginning of the 02/03 academic year and an addition of various fees that were not accounted for in the initial budget.



**Figure 5: The cost of a MSc scholarship for Malawian and SADC student. For comparison the initial budget as presented in the project document is included.**

These fees are:

- Application fee
- Registration fee
- Library fee
- Examination/assessment fee
- Supervisory fee
- Medical Allowance
- Field Allowance

The changes in the MSc scholarship budget are noticeable and raise questions about the purpose of these fees and whether they should be included in the tuition. Of the fees above the most striking is the supervisory fee which is about 58000 MK per year per student. It is not clear in the documents who made the decision on the raise of the tuition and who proposed the establishment of the fees. As a result of the changes in the MSc scholarships ICEIDA decided to reduce the number of MSc scholarships by four, from 12 to 8.

Other financial issues have been similar to what was budgeted for in the beginning except of the cost of staff development, which was more expensive than anticipated (esp. for PhD studies of Mr. Sikawa). The library has received money according to the initial budget but some of the money was used to buy an extra computer that was thought to be needed in relation to the establishment of the reprint collection database.

In general it can be said that the initial budget for the scholarship was not thought well enough through. Some of the cost component should have been considered in the initial budget (e.g. medical fees and supervisory fee) on the other hand it might also be argued that other fees should have been part of the tuition.

The distribution of the money from the administration of Bunda College to the department is discussed elsewhere in the report. Yet for an evaluation of a project of this nature the distribution of the money (timing and the amount) has to be clear and transparent, especially in order to evaluate the efficiency component of the project

## **4 PROJECT ANALYSIS**

### **4.1 Efficiency**

Any activity should both be internally efficient in its own operations and have as one of its intended effects the increase in the general efficiency of the education sector. For example, a major goal of any educational system would have to be to increase the cost-effectiveness with which it fulfils its educational responsibilities. Efficiency has much to do with comparisons between resource inputs and product output. The smaller the resource input per unit of output, the more efficient the producer is said to be and vice versa. In deciding on the output it is important to agree on the yard stick used for

evaluation of the output. It is not possible to do a detailed analysis of the efficiency of the aquaculture programme at BCA due to limited information available.

However, in terms of delivery of services, the team has observed several issues. First is the book allowance. Students in all other undergraduate programs at Bunda College receive USD 50 per year when the students in the AFSD receive USD 200 through the ICEIDA scholarships and study grants. Students make their book orders at the beginning of the semester through the library. The library procures books from suppliers in the UK although now they have changed to a South African supplier. Books take a long time to procure and there have been a large number of cases whose books come too late or never come at all. Students supported by this project have been refunded their money in some cases and it is not possible to determine if that money was used for books. This has been the most inefficient component of the project.

Personal allowance disbursement is another issue. The ICEIDA office pays BCA and BCA disburses personal allowances to students. BCA has indicated that due to financial cash flow problems the College is currently undergoing, there have been incidences where personal allowances have been delayed. This has caused a great deal of inconvenience to the students. In the case to graduate students this could be serious since they rely on the personal allowance for subsistence. But so far nothing beyond the inconvenience has happened. The same may be said about the medical allowance.

A third area is procurement of books for the library. Again the process is the same as for the books for students. However, the delays in procurement in the library do not have disastrous consequences as those of students. The library has managed to acquire most of the required books in the library. It must be said that the library orders books and ICEIDA makes the payment directly. This is convenient for BCA since payments are in foreign currency. In terms of financial disbursement from ICEIDA office to BCA, the team has not observed any problems. The College always receives the money on time and according to schedule. A problem has been noted in BCA disbursement of funds to the AFSD. We have learnt that the College has not been able to remit to the department the 60% of the tuition and supervisory fees from the graduate students fees. This has created tension between the department and the College administration. The team believes that this is an internal matter which the College should be able to resolve administratively without any problem.

It should be noted that ICEIDA office relies on the TA/PO in terms of communication with BCA. This communication has been efficient. However, there appears to be a slight problem in communication between the College Administration and the Department or the students. The consultants recommend that problematic financial situations should be communicated to both students and the department as soon as they arise. This will avoid unnecessary tension between the interested parties.

## **4.2 Effectiveness**

Effectiveness is a measure of the extent to which the formally stated objectives have been achieved or can be expected to be achieved. The main objectives of the project were three

and the question is to what extent were they achieved?

***1. to deliver an effective and top quality courses in fisheries and aquaculture sciences***

This objective has been achieved through:

- increased number of staff and therefore the number of courses which cover a broader area within the discipline
- increased academic qualification of the staff
- the library has strengthen it section on aquaculture and fisheries science through new books, access to databases and reprint collection
- increased research facilities since 1999 which ICEIDA took part in attracting other donors
- the curriculum has increased especially in relation to the establishment of the MSc program.
- The introduction of the MSc program where ICEIDA provided scholarships
  - the research is increased
  - lecturers are stimulated
  - development of higher quality courses
  - positive attitudes towards the undergraduates

***2. to increase the awareness of the of the program in the SADC region***

There is a little bit of evidence that some awareness was created in the SADC region as the number of regional students attending the program shows. However there is no evidence of organized effort to create more awareness and none of those who were consulted could give the evaluation team concrete information on such activities. The team has learnt about a trip that was undertaken by members of the AFSD staff to Zambia in September 2003 where the programme was introduced. The general feeling of those that went to Zambia was that this visit succeeded in introducing the programme. We were informed that an increased awareness might be difficult to create, but the department has hoped that by attending regional meetings and conferences, and through the regional students, the word would spread around. It was also mentioned that increased research activities leading to publication in international journals would also advertise the program

One member of the evaluation team has observed that people in a newly established aquaculture department at the MoF in Mozambique was not aware of the AFSD. On the other hand the department staff had a prospectus on aquaculture training in at the WFC in Domasi.

During one of the PMG meetings this issue was raised by ICEIDA representative and the department was asked to come up with a plan of action to meet this objective.

It would have been appropriate to see efforts like:

- A prospectus send to fisheries departments and other key places about the program

- A web site where detailed description of the program is provided with emphasis on research activities, research facilities, course description, staff members and the MSc program.
- Visits to the regional countries where in-service potential students are approached

### ***3. To enhance capability in carrying out cutting-edge research in demand driven research areas***

At this point it has been pointed out several times that ICEIDA has contributed to the training of highly qualified staff which has the potential of carrying out such research and in the future with more PhD educated staff the potential of the department will increase even further. It has also been pointed out that the facilities for aquaculture and fisheries research is one of the best in sub-Saharan Africa (the BCA aquaculture farm). The professional support of the library to the AFSD has also been mentioned and ICEIDA has been part of that also. With the establishment of the MSc program a forum is created to carry out applied and theoretical studies of high novelty and standards. A drawback of the above issues is the situation that was created when BCA increased the fees for the students, both at undergraduate and graduate levels. The tuition for the Malawian undergraduate students went from 1500 MK to 25000 MK which equals 1600% increase (times 10 fellowships per year) and the fees for the MSc students increased by about 100%. ICEIDA met this increase by cutting the 4<sup>th</sup> year research cost factor in the BSc scholarship.

For the MSc scholarships ICEIDA decided to reduce the number of MSc scholarships by 30% (from 12 to 8). This reduction of MSc scholarships will have a severe effect on the research component of the program and therefore reduces the project possibility of achieving its objective. As a proof of the situation there is an indication that some of the staff members have used their personal funds (although some were refunded later) to support the research of their students.

### **4.3 Impact of the Project**

Measuring the impact of the project might be difficult especially since the project period is not finished and also the project time is rather short. The effect of such project can though be of various sorts. Long-term effects might be one way to look at impact but in general it is easier to estimate the short and immediate effect or impact of such project. The effects can be positive and also negative. The impact can be foreseen but there might also be un-intended impact that the project design did not account for. The positive intended impact in this project is rather easy to spot and they are:

#### **Positive impact:**

- Increase of the departments capacity
  - Increased qualification of the staff
  - Increased research activities within the department
  - Better support system for the department in terms of information
- Improved service of the library

- Stronger aquaculture and fisheries section
- Subscription to databases
- Creation of the reprint collection database
- New computer
- The project has created a professional environment for in-service people at the Department of Fisheries
- The publication of a report series, the Aqua-Fish Technical Report. The report's editor is an ICEIDA support recipient and many of the contributors to the report have received ICEIDA support.
- Increase of professionals in aquaculture and fisheries science through graduation of number of students with BSc and MSc degrees
- Exposure of the department has increased
  - Locally through the provision of the fingerlings to local farmers
  - Nationally through increased research activities
  - Regionally through the regional students

Some of the positive impacts were un-intended i.e. they were not considered when the objectives of the project were designed. These un-intended effects are e.g. the establishment of the reprint collection, the procurement of a new computer to the library and the publication of the Aqua-Fish Technical Report.

**Negative impact:**

No major negative issues can be identified at this stage, but a few minor un-intended matters can be pointed out.

- Un-intended negative impact might be an observed friction between the students and the library staff in relation to the book orders. It looks some of the students have developed a reduced trust to the people at the library. On the other hand one may look at the privilege that these students have in relation to other students at BCA.
- The establishment of the department (project) might contribute to the shortage of staff with a diploma (technical officers TO). As pointed out in reports on the training needs in Malawi and in the SADC region there is great demand for TO in the field to assist the farmers in aquaculture. When the department was established the diploma program was dropped. Those who received ICEIDA scholarships were mature entry students from the Fisheries Department which had a diploma and were upgraded from TO. Due to shortage of TO no one is to fill their place and since the diploma was not being offered then it can be argued that the project has the potential to contribute to the already severe shortage of diploma holders in aquaculture and therefore inhibit the development in aquaculture.

**4.4 Relevance of the Project**

The overall objective of the project is to assist BCA to realise the long-term goal manifested in the vision statement of its Aquaculture and Fisheries Science Department which is “to create a centre of excellence in training and research in aquaculture and

fisheries sciences in Malawi and the SADC region". In the first phase of the project there was a strong argument for a regional project in in-land fisheries development in the SADC region. Malawi and in particular BCA offered the greatest potential to carry out a regional training programme in in-land fisheries. One reason was BCA's experience in offering a regional post-graduate programme in animal science. Secondly there was a big investment by JICA into the aquaculture and fisheries programme at BCA in terms of classrooms, offices, laboratories and fishponds. BCA had the capacity to train students in this area and had demonstrated interest in the discipline.

At the national level, the Malawi Poverty Reduction Strategy Paper identifies fish farming as one of the strategies to be employed in poverty reduction. For the past 15 years, and even longer, a number of donors and NGOs have shown interest and embarked on fish-farming initiatives in the country. Whereas in the past, fisheries officers were limited to lakeshore districts, now upland fish farming is increased and the need for trained personnel is also increasing. According to the Fisheries Department fisheries development sites/offices have been established in all the five districts in the Northern Region, in 7 of the nine districts in the Central Region and another 8 districts in the Southern Region. The aim of the Department is to have fisheries offices in all the districts but they have no resources at the moment in terms of staff, houses and offices.

With a stated goal of increasing aquaculture production from 500 tons to 1000 tons by the year 2005, it is clear that they will need people to work in these areas. Hence the aquaculture training programme at BCA and the support that ICEIDA is providing is quite relevant to Malawi.

The team has observed that already BCA has contributed in up grading of TA level staff to TO level through the diploma programme. It appears that this is where there is a great need in the department. Some FD staff members have also obtained BSc degrees and have taken up administrative positions in the department of fisheries. Now that BCA is only offering BScs and no other institution is producing diploma graduates a vacuum is created at the TO level. We have observed that BCA does not want to go back to offering diplomas but we think this may be one of the biggest contributions BCA can make in the development of aquaculture in the country. There are many fish farmers coming up but they have no technical and extension services support. This is the weakest link in the development of aquaculture in the country and someone must step in to help.

At the regional level, there appears to be big demand for the programme from Zambia. This may be related to the fast growing aquaculture industry in this country. Yet, we can also say that as many countries begin to see a decline in catches of wild fisheries and begin to recognize the potential in aquaculture, there will be more demand for technical expertise to support the development of aquaculture in the region. The programme is therefore relevant at the regional level as the trip to Zambia by AFSD staff members in 2003 indicates.

The team has observed that since the ICEIDA scholarships came to a stop last year, no foreign students from the region have been enrolled. On the other hand interest in the

programme has increased locally. It will be necessary for BCA to invest in a marketing strategy for the programme in the region. Ideas on how to do this are many but the most promising ones include producing a prospectus that can be sent to Departments of Fisheries in the region using the SADC office. BCA needs to put information about the AFSD programme on the website. Such information should include admission requirements, fees and the quality of the programme. There have been proposals also on the possibility of BCA liaising with students to assist them to get funding from donors in their own countries. Donors need to be informed directly about this programme.

#### **4.5 Sustainability of the project**

Sustainability is an indication whether the positive impacts of the project are likely to continue after external assistance has come to an end. The ICEIDA contribution to the staff development should be sustainable if the individuals stay with the department. The same can be said about the support to the library. The sustainability of the regional impact is not easy to determine. In general, scholarships are not sustainable unless the school takes over and grants the same amount to the same number of students. This is not clear when it comes to the regional scholarships. No new scholarships will be granted to students entering the program for the 2003/2004 school year and until the end of the project and no regional students entered the program this year and no indication is for regional students to be accepted to into the program next year either.

It is the team's opinion that certain components of the scholarships, such as the book allowance and the research money are hardly sustainable especially since the amount exceeds the amount BCA allocates for those particular components to the national students. BCA cannot sustain the same level in terms of book allowance and research money as stipulated in the scholarship budget plan. It would have been more sustainable to allocate part of the book allowance to the library and adjust the book allowance of the ICEIDA supported students to what other students get from BCA (about 50 US\$).

The evaluation team feels that it would have been more sustainable to create a research fund within the department where students can apply for research money in relation to the proposed research project.

## **5 CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Outcome of the project**

ICEIDA has been providing support to the aquaculture programme at Bunda College for a period of ten years now. Currently it is in its second phase of support which extends from 2000 to 2005. The contribution that this support has made is tremendous and the aquaculture component at BCA has moved from being a one course with limited facilities and no permanent staff to being a separate department with 12 positions with highly qualified staff and research facilities that are considered one of the best in sub-Saharan Africa. It is however difficult sometimes to separate the impact of the support in the first

five years to the impact coming from the current phase. Some of the impact being experienced now is a result of the support from the first phase. It is in fact too early to start observing most of the impact resulting from the support in the second phase of the support.

However, the evaluation team generally feels that the project has made a major contribution in addressing local, national and SADC regional needs. Locally, both the Department of Aquaculture and Fisheries Science as well as Bunda College of Agriculture aims at creating a centre of excellence in aquaculture and fisheries science in the SADC region. To achieve this aim, the department needs to develop its capacity to provide good quality training, research and outreach programmes. ICEIDA support to the regional aquaculture training program in this phase has contributed to capacity building of the department by

1. **Staff training:** As noted above, the project provided one MSc and one PhD scholarship which have benefited two members of staff in the Department. Mr Jere who was offered the MSc scholarship has completed his studies and Mr. Sikawa who was offered the PhD. Scholarship will complete his studies in December 2004. The project also sponsored the last year of Dr. Kaunda's Ph.D. studies.
2. **Library support:** The project has strengthened the aquaculture section of the library with new books and periodicals, reprint data base and electronic data base. This support is benefiting staff and students of the department to access up-to-date literature for high quality research and training.
3. **Increased staff establishment:** As part of Bunda College's commitments to the project, the staff establishment for the department has been increased. The department has in response recruited more staff, increasing from 5 at the beginning of the project to 12. This increase has strengthened the department's capacity to provide good quality training and research programmes.
4. **Provision of undergraduate student scholarships:** Although not sustainable as earlier observed, the undergraduate student scholarships have increased the department's visibility among students at Bunda. Of late, the number of students opting for the BSc in aquaculture and fisheries science is increasing. The current number of first year students who have chosen this programme is much higher than that of second, third and fourth year's. This increase could be indicative of future increases in the demand for the programme.
5. **Provision of postgraduate student scholarships:** Provision of postgraduate student scholarships has definitely contributed to the improvement of course delivery to both the MSc as well as undergraduate programmes. The MSc programme has a strong research component which is contributing to the departments capacity to conduct good quality research.

- 6. Curriculum development:** As observed above the aquaculture curriculum at Bunda has undergone major revisions in the past ten years. Bunda College was only offering one course in aquaculture in the period prior to 1993, but since then, the curriculum has gone through several transformations including a diploma in agriculture with aquaculture option, BSc in agriculture with aquaculture option and currently a BSc in aquaculture. In addition, ICEIDA supported the development of the MSc curriculum through a workshop in Mongochi. These developments would not have been possible without the ICEIDA support in staff development, student support and library support.

Nationally, the project has made a critical contribution through increased number of well trained staff for the Department of Fisheries. Most of the scholarships for Malawian students were used to upgrade staff in the Department from the level of technical assistants or technical officers to professional officers level by training them to BSc. levels. Some have been upgrades from BSc. level to MSc. level.

Regionally, the support has contributed by increasing the number of trained staff in the SADC region and beyond. The project has supported 63 BSc students and six MSc students with scholarships, but two have yet to be granted. Some of these students came from as far as Uganda. Training these regional students has also contributed to the visibility of the programme in the region.

## **5.2 Weaknesses of the project**

The evaluation team has however observed a few weaknesses with the project. Some of the weaknesses relate to the design of the project while others relate to the implementation and the management of the project.

1. In terms of the design of the project, one weakness relates to book allowances provided to the undergraduate students. The team has failed to understand the justification of providing US\$200 per student as compared to the rest of the students at Bunda College who receive US\$50 per student. This has been regarded as unsustainable and inefficient use of project funds. It would have been better to provide the student with the same amount of book allowance as other Bunda College students and use the extra US\$150 per student for beefing up (as was done but the students protested vigorously and it was returned to former system) support for the library. The materials that the library would have procured with such money would have assisted not only the current students but also many others to come. In general the procurement of the books needs to start earlier so the books will arrive timely for the students' course work, and to avoid problems due to delay of books.
2. The team also feels that making an equal allocation of research funds to the undergraduate students was not an efficient way of using project funds because it tended to give too much to those students whose research project required a smaller budget while not adequately assisting those students whose research

- projects required a higher budget. A more efficient way would possibly have been to lump all the research funds together in the department and allow the department and supervisors of the students allocate the funds to students depending on the needs of each research project.
3. The team also observed that no properly planned activities were undertaken in order to increase awareness of the programme in the region. It would have been better if the department planned and implemented specific activities aimed at creating more awareness of the programme in the region.
  4. As has been pointed out in this report the greatest training need in aquaculture in the SADC region is the training towards a diploma in aquaculture. This is also evident in reports from the MoF in Malawi. Extension officers for aquaculture (Technical officers) are usually diploma holders. Since the BCA offered BSc (and MSc) in aquaculture the diploma programme offered by the college has come to an end. That has reduced the recruitment rate of aquaculture diploma holders to the DoF. The mature entrees into the AFSD are usually diploma holders from the MoF. These diploma holders often leave the aquaculture extension service and no one is there to replace them. When these people return to the MoF they do not take their former post. For this reason it is fair to say, although it is un-intended, the stoppage of the diploma programme and the onset of the BSc programme in aquaculture has created a vacuum for technical officers in the Department of Fisheries. It must be pointed out the diploma programme has/is to be moved to the Malawi College of Fisheries in Mpebwe and the AFSD is currently working with the MCF on developing curriculum for the diploma programme.
  5. We see the dual role of the ICEIDA expert as the TA and as the PO as a weakness in the implementation and the management of the project. A day-to-day management is necessary for the project but his dual role was bound to cause conflicts, even though many of the conflicts can be considered as minor, between him as an ICEIDA staff member who is responsible for the day-to-day manager of the project and while at the same time being the AFSD staff member. Only due to his personal qualifications and great effort this did not harm the project.
  6. It can be argued that the initial budget was not planned well enough by both parties. The budget changes with the increase in tuition and addition of fees is an evidence of that.
  7. The untimely (for the project) changes in the BCA fees affect the results of the project causing the project to reduce its output and hence reduce the efficiency.
  8. A delay of transferring the money from the BCA administration to the department caused some inconveniences for the department, students and some of the staff members. A clear policy, especially for the undergraduate program, is needed to ensure fast and timely transfer of money to the department. The evaluation team

recognizes the financial difficulties the BCA is going through, which might explain these delays.

9. The evaluation team fears the fact that when scholarships are no longer available for the regional students then the program will lose its regional flavor, and can therefore no longer serve as a regional training center.

### 5.3 Recommendations

**The recommendations presented in this draft are tentative and will be revised at later stage.** These recommendations should be looked at as suggestions to both parties on future cooperation

1. As observed above, ICEIDA support to the aquaculture programme at Bunda has continued for a period of ten years now. It is therefore expected that this support must have made a lot of impact in a number of cases as observed above. The developments that have occurred in the aquaculture programme are tremendous. The programme has developed from a single course to a full department with a fully developed BSc and MSc programme. Much of this development is attributed to ICEIDA support. However, a ten year period of support is long enough for ICEIDA to start thinking of withdrawing or refocussing the support into some other areas.
2. In this regard the evaluation team is of the opinion that support for undergraduate scholarships and study grants for Malawian students should be stopped. The current students receiving ICEIDA support should be the only ones to continue getting this support until the end of the project period in 2005. The Malawian government is already supporting most of the students at BCA and this support can be extended to the students in the aquaculture programme. Therefore the project should not sponsor any other Malawian students for their BSc studies.
3. The evaluation team recommends that the support for the regional students should continue in order to continue giving a regional flavour to the programme.
4. Scholarship support for MSc. students from Malawi and the SADC region should however be continued since these programmes are currently not being supported by the Government of Malawi. All MSc students at Bunda are donor supported. We feel that the MSc programme adds to the quality of education and research in the department. The second justification for the continuation of support to the MSc programme is the fact that the programme started only in 2001 and has for now not matured enough to stand on its own but with greater awareness in the region other donors might see the AFSD as option for training individuals from other regional projects.
5. In relation to the great demand for fingerlings in Malawi, BCA can play a major role in providing fingerlings to the local community. The facilities at BCA are

very much underutilized. Fingerlings production might generate income for the department which will contribute to the financial viability of the AFSD. An initial support towards such activity will be valuable for the programme.

6. The library has been receiving support from ICEIDA that has been well utilized. At this moment the library is very well equipped with a computer system and a fiber optic connectivity on the campus. Bunda is acquiring a satellite connection to internet through a VSAT donated to MALICO "the Malawi Library and Information Consortium. An assistance is needed towards monthly charges, which are now about US\$ 3000 for 512 kb, to run the satellite connection . Such connection will encourage uptake of on-line journal articles and other electronic opportunities and contribute to the strengthening of the capacity of the AFSD. Future support for BCA could consider this area.
7. The evaluation has revealed that there was insufficient effort to create awareness of the programme in the region. The evaluation team suggests a specific activities towards creating this awareness being implemented in the remaining period of the project. Some of the activities that could be considered include:
  - a. Web page
  - b. Site visits
  - c. ProspectusIt would be beneficial for the department to identify a specific person who would be responsible for following up on the awareness activities and looking for sponsorship for future MSc students in the region. This will contribute to the sustainability of the programme.
8. The evaluation team is of the opinion that future support to this programme should consider creating a research fund for students. Such a fund will assist the department to allocate funds according to needs of specific student research projects.
9. Considering the problems that the college has been experiencing regarding transfer of funds to the department and students, it would be more efficient to open a special account for project funds. Such an account will facilitate timely disbursements of funds and contribute to the efficiency of the project.

**APPENDIX 1: TERMS OF REFERENCE FOR THE EVALUATION**

**Terms of Reference**  
For the Evaluation of  
**the Project: “Support to the Regional Aquaculture  
Training Programme At Bunda College of Agriculture”  
(2000 - 2005)**

Funded and implemented in cooperation of the Bunda College of Agriculture (BCA) and the International Development Agency (ICEIDA)

The evaluation will be carried out in November 2003

## **1. Project Background**

The development co-operation between Iceland and Malawi was initiated in 1989 through a Nordic/SADC Development Initiative, where Iceland assumed the role of the Nordic Fisheries Focal Point for the SADC region.

Aquaculture development in Malawi and elsewhere in Africa has made efforts to promote integrated systems of agriculture-aquaculture. The goal is to increase the available protein and fish source for human consumption, and supplement and/or complement traditional farming.

Aquaculture was identified as a priority area for regional training under the SADC Regional Fisheries Training Programme. The training provided by the Bunda College of Agriculture (BCA) in Aquaculture has received favourable comments from SADC countries that have sent students there for training.

In 1993 ICEIDA pledged to support the Bunda College of Agriculture in Malawi in developing and launching a new course in aquaculture to be offered in the SADC region. Initially the course was designed as a 3-year Diploma Programme but when the Diploma Programme was phased out at Bunda College in 1997, the course was upgraded to a 4 year BSc course.

The co-operation between the Bunda College of Agriculture and ICEIDA can broadly be divided into two periods: 1994 -1999 and 2000-2005. During the earlier period the Aquaculture programme expanded rapidly and in the year 1999 the Aquaculture and Fisheries Science Department (AFSD) was established. Before that time a diploma in aquaculture was an option within the Animal Science Department. Now, the Department offers a four-year BSc programme and a two-year MSc programme in Aquaculture and Fisheries Science. ICEIDA support has involved scholarships for Malawian and regional students, development of teaching materials and funds for further education of staff, improvement of the aquaculture and fish biology literature and recruitment of part time local teachers.

In June 2000 a contract was made between ICEIDA and the Bunda College of Agriculture where ICEIDA agreed to continue its support of the College until 2005 (ICEIDA, 2000). This marks the outline of the second period in the ICEIDA support.

In the second project period ICEIDA supports the same components of the Aquaculture and Fisheries Science Department activities as in the first period, however, during the project period the ICEIDA support will be gradually reduced. Implementation is primarily in the hands of Bunda College of Agriculture authorities. During this period two local experts were expected to get ICEIDA funding in order to obtain further education and at the same time two would be funded by CIDA (Canadian International Development Agency) and one by JICA (Japanese International Cooperation Agency). To assist the department during this period of transition technical assistance has been provided by ICEIDA since the year 2000.

ICEIDA contribution:

- a) Scholarship programme for Malawian students studying at BCA and students from the SADC region.
- b) Scholarship to two BCA staff members, one for MSc degree and one for PhD degree, in subjects relevant to the Aquaculture Programme at a University in the SADC region or in other development countries outside SADC.
- c) Provision of financial support for local teaching assistance.
- d) Provision of technical assistance, an expert in an Aquaculture and Fisheries Sciences.
- e) Support to the Aquaculture section of the BCA library.

BCA contribution:

- a) Provide necessary staff for the BCA Aquaculture Programme as required by this project.
- b) Provide administrative support to the implementation of the project
- c) Be in charge of recruitment of students to the BCA Aquaculture Programme.
- d) Provide housing for eventual ICEIDA expert(s).

## 2. Objectives and Outputs

The main development objective of the project is to increase the possibilities to use aquaculture in Malawi and the SADC region to increase the available protein and fish source for the inhabitants, and by supplementing or complementing traditional farming lead to improved livelihood. It will be done through providing Bunda College with well-trained and skilled lecturers and scientists that will develop and offer a top quality aquaculture-training programme and are capable of conducting and coordinating cutting-edge research in demand-driven research areas that will support the aquaculture development in Malawi and the region.

**The immediate objectives are:**

- Support staff members for further training in order to increase the quality of the Aquaculture and Fisheries Science Programme at Bunda College, at BSc and MSc levels.
- Increase the awareness of the Aquaculture and Fisheries Science Programme in the SADC region.
- Enhance capability in carrying out cutting-edge research in demand-driven research areas
- Strengthen the aquaculture and fisheries sectors in the region by producing skilled people in the field
- Developing expertise in aquaculture and fisheries science in Malawi that can act as support to the sector, through advise to other governmental institutions, donors and the private sector.

**Expected outputs**

- 1) An effective and top quality delivery of the Aquaculture and Fisheries courses

- 2) An increased awareness of the programme in the SADC region
- 3) An enhanced capability in carrying out cutting-edge research in demand-driven research areas.

3. The Project Components and Strategy:  
Scholarship programme: Provision of scholarships and study grants  
Staff development  
Teaching assistance  
Technical Assistance  
Support to the BCA Library

One full time ICEIDA expert has been engaged in the project since September 2000, and is working full time as a lecturer in the Aquaculture and Fisheries Science Department and is a co-ordinator, Project Officer, for the project components funded by ICEIDA.

The plan of operation between the two parties is valid from July 2000 to the end of May 2005, or for five years.

Starting date: 15th July 2000

Estimated duration: 5 years

Total estimated Cost (as from 15th July 2000): US\$ 700,000. -

#### **4. Reasons for the Evaluation**

In the Plan of Operation from the 15th of July signed by the two cooperating parties there is stipulated that if the contracting parties agreed on an independent project evaluation it should be carried out during the final year of the project. The modalities of the evaluation will be approved by the contracting parties. Based on the recommendations of the evaluation, the project may be carried on as agreed or extended if felt necessary to secure the overall output of the project.

This external evaluation is being undertaken at the request of ICEIDA in co-operation with the Aquaculture and Fisheries Science Department in order to ascertain the extent to which the goals and the objectives of the project have been achieved.

The evaluation should provide the staff of BCA and ICEIDA with information that could assist in planning and implementing future activities of this kind.

The evaluation should provide BCA and ICEIDA information about strengths and weaknesses of the Aquaculture and Fisheries Science Programme at BCA that can be used as guidelines for further development and improvements.

#### **5. Scope and Focus of the Evaluation**

The evaluation will focus on providing information for decision-makers, and will also be a learning tool for the stakeholders to improve future policy and interventions.

In general, the evaluation shall;

- ✓ evaluate the goals and purposes of the project and determine to what extent the goals have been achieved;
- ✓ evaluate inputs and outputs and financial management of the project
- ✓ consider unintended outcomes of the project;
- ✓ evaluate the impact for the beneficiaries (BCA, the students, other countries in SADC), or how it can be measured in the future if not obvious yet;
- ✓ provide a description of major constraints and risk factors for the project implementation;
- ✓ assess the degree of the project's sustainability;
- ✓ provide a description of lessons learned in relation to future programme implementation;
- ✓ give recommendations on future modifications and improvements in light of the above listed objectives.

## **6. Issues to be Covered in the Evaluation**

Special attention shall be given to but not necessarily limited to, the following issues:

**Efficiency:**

Results achieved (inputs -outputs).

Have resources been effectively used in the project? What problems have arisen? Could they be avoided in similar projects?

- ✓ review of the project organisation at all levels, including management, reporting and monitoring, human resources and technical backup;
- ✓ assessment of financial management, including disbursement of funds at the different levels and financial reporting;
- ✓ assessment of the scholarships provision and needs for that kind of support;
- ✓ assessment of staff development and needs for further capacity building;
- ✓ assessment of needs for eventual additional material or equipment and other capital investments, especially in relation to the teaching assistance and the library.

**Effectiveness:**

Achievement of objectives.

*Has the project achieved its objectives? What has facilitated or prevented the effectiveness of the project?*

- ✓ the potential of the project to reach the stated objectives;
- ✓ to which extent has the project progressed towards producing the anticipated outputs?

**Impact:**

*Other effects of the project. Technological and socio-cultural factors affecting project implementation shall be considered.*

*What are the positive and negative effects of the project? What are their causes?*

assessment of the impact of the ICEIDA support to BCA (of scholarships provision, staff development, support to the library of BCA and technical assistance).

**Relevance:**

The direction and usefulness of the project.

Are the objectives worthwhile? Does the design of the project support the objectives?

- ✓ assessment of project relevance in relation to the Government policy in the sector;
- ✓ assessment of the project's relevance in relation to other donor agencies input and support to this field.

Sustainability:

The long-term viability of the project.

Which benefits of the project continue beyond donor involvement?

- ✓ assessment of the project (activities of the project and/or the impact of the project) potential to survive after donor financial and technical support;
- ✓ assessment of the need for external technical assistance beyond September 2004 (short-term or long-term);
- ✓ assessment of what kind of follow-up/exit strategy would be needed to secure the sustainability of the project.

The evaluation will be sensitive to unintended outcomes of the project.

## **7. Plan of Work and Methodology**

Access to relevant background materials, contracts, reports and other materials concerning the ICEIDA's and BCA co-operation, including policy papers not directly related to the project.

The evaluation will be carried out through meetings with the authorities in question, including BCA's Board of Governors, BCA personnel, and students.

The evaluation team will meet, if possible, with other donors who provide support to BCA.

Final discussions will be held in BCA with the BCA's representatives and the ICEIDA Country Director and Project Officer, where the main preliminary findings and recommendations of the team will be presented.

## **8. Evaluation Team and Cost**

The team leader shall have relevant experience in developing countries a University Degree in Education and Fisheries Sciences and a good understanding of training and management issues. Fluency in the English language is required.

Team members should also have relevant experience in developing countries and good understanding of training and management issues.

Team leader will be;

Mr Þór H. Ásgeirsson (M.Ed. and MSc), Deputy Programme Director of the UNU Fisheries Training Programme in Reykjavik, Iceland.

Other team members and resource persons will be;

Dr Charles Masango, Rural Development Department, Bunda College of Agriculture, Malawi

and

Dr Stanley Khaila, Director of Agricultural Policy Research Unit (APRU), Malawi

Meetings will be held with representatives from other donor agencies in similar projects or programmes; e.g. (JICA , Norad, CIDA).

The cost of the evaluation will be covered by the project budget.

### **9. Timetable and Reporting**

Preparation for the evaluation will take place during 10 days in October 2003. Fieldwork will be carried out in Malawi on the 2nd to 15th of November 2003, 14 days, with a draft report being prepared on-site.

The team leader shall have the main responsibility for the writing and compilation of the report. A draft report will be submitted to BCA and ICEIDA for comments in early January. The final report will be submitted to BCA and ICEIDA, before 1 February 2004.

**APPENDIX 2: ITINERARY FOR THE EVALUATION TEAM**

<b>Draft Itinerary for Evaluation of the Regional Aquaculture Training Programme</b>			
<b>Day/Date</b>	<b>Time</b>	<b>Activity</b>	<b>People Involved</b>
Monday 3/11/2003	08:00-12:00		
	14:00-14:30	Meeting Head, AFSD	Head AFSD
	14:30-16:00	Evaluation team meeting	Evaluation team
Tuesday 4/11/2003	08:00-09:00	Review AFSD Documents	Evaluation team
	09:00-12:00	Visit fish farm	Evaluation team & ICEIDA Project Officer
	13:30-16:30	Review ICEIDA Documents and Team Discussions	Evaluation team
Wednesday 5/11/2003	09:00-10:30	Interview Head AFSD	Head AFSD & Evaluation team
	10:30-12:00	Interview ICEIDA Project Officer	Evaluation team & ICEIDA Project Officer
	14:00-15:00	Interview Registrar of BCA	Evaluation team & Registrar
	15:00-16:00	Interview CFO	Evaluation team & CFO
	16:00-17:00		
Thursday 6/11/2003	08:00-16:00	Field trip to Mchinji and Namitete	Evaluation team & ICEIDA Project Officer
Friday 7/11/2003	09:00-10:00	Interview AFSD BSc. Students	Evaluation team & BSc. Students
	10:00-11:00	Interview AFSD MSc. Students	Evaluation team & MSc. Students
	11:00-12:00	Interview Dean of Environmental Sciences and Dean of Agriculture in the Aquaculture meeting room	Evaluation team & Deans (ES & Agric)
	14:00-15:00		
	15:00-16:00		
Saturday 8/11/2003			

<b>Day/Date</b>	<b>Time</b>	<b>Activity</b>	<b>People Involved</b>
Monday 10/11/2003	09:00- 11:00	Meeting the Director Fisheries Department	Evaluation team & Director of Fisheries
	11:00- 12:00	Meeting the Country Director for JICA	Evaluation team & Country Director, JICA
Monday 10/11/2003	14:00- 15:00	Meeting the Country Director, CIDA	Evaluation team & Country Director CIDA
	15:00- 16:00	Meeting with GTZ	Evaluation team & Country Director GTZ
Tuesday 11/11/2003	09:00- 10:00	Interview BCA Librarian	Evaluation team & Librarian
	10:00- 12:00	Visit Library	Evaluation team & Librarian
	14:00- 16:30	Interview ICEIDA Country Director	Evaluation team & ICEIDA Country Director
Wednesday 12/11/2003	09:00- 16:00	Team discussions and write up	Evaluation team
Thursday 13/11/2003		Team discussions and write up	Evaluation team
Friday 14/11/2003	09:00- 12:00	Presentation of results	Evaluation team
	14:00- 16:00	Discussion of the results and in- cooperation of comments	Evaluation team

### **APPENDIX 3: LIST OF PERSONS CONSULTED AND INTERVIEWED**

#### **Bunda College of Agriculture:**

Dr. Emmanuel Kaunda, head of the Aquaculture and Fisheries Science Department

Dr. Jeromy S. Likongwe, lecturer and a former head of the AFSD

Mr. Christopher Malemba, College Financial Officer

Mrs. Zalira Msonthi, BCA Registrar

Mr. Gudni Eiriksson, ICEIDA project officer

Dr. T. N. Ngwira, Dean of Agriculture

Prof. Moses Kwapata, Dean Faculty of Environmental Science

#### ***Students at AFSD***

Amas T. Mailosi, 4th year, Malawi

Petros Chigwechokha, 3rd year, Malawi

Manda Edward, 3rd, Zambia

Moses Limuwa, 3rd year, Malawi

Kampinda J. Luaba, 3rd year, Zambia

Martin D. Nangwale, 2nd year, Malawi

Silli Laban, 2nd year, Malawi

Luness Mataka, 2nd year, Malawi female

Stain Banda, 4th year, Malawi

Rwaributware Donat, 2nd year MSc – ending, Uganda

Kahwa David, 2nd year MSc-starting, Uganda

Kenneth Kapanda, 2nd year MSc-ending, Zambia

Chimwemwe Ndamala, 2nd year MSc-starting, Malawi (female)

#### ***BCA Library:***

Mr. G. F. Salanje, Librarian

Mrs. Margaret Ngwira, Senior Assistant Librarian

Ms. Gift Kadzamira, Assistant Librarian

**Chokani's Farm:**

Mr. Chokani, a farmer in Mchinja district.

Mr. P.B. Kataya, technician

**ICEIDA Office:**

Ms. Thordís Sigurðardóttir, ICEIDA country director

**Fisheries Department:**

Morris Makhuwila, Principal Fisheries Officer (Planng)

Joy Mfunne, Principal Fisheries Officer (Training)

**JICA Office:**

Mr. Matsumato Kenichi, assistant resident representative

**CIDA office:**

Grant Hawes, Country Director

## APPENDIX 4: LIST OF DOCUMENTS AND REFERENCES

1. SIAST. Aquaculture Course Development 1994-1998
2. ICEIDA-BCA. Minutes from PMG meetings:
  - a) May 10 2001
  - b) December 12 2001
  - c) February 7 2002
  - d) June 19 2002
  - e) May 28 2003
3. BCA. Implementation of the project “Support to the Regional Aquaculture Training Program at Bunda College of Agriculture”. PRGOGRESS REPORT. January 2002
4. BCA. Aquaculture and Fisheries Science Department document on comparison of the courses in the old (5 years diploma/degree) program and the new (4 years BSc in aquaculture) program.
5. ICEIDA-BCA. Support to the regional aquaculture training program at Bunda College of Agriculture – University of Malawi 2000-2005: **Plan of Operation**, 15<sup>th</sup> July 2000
6. ICEIDA-BCA. Support to the regional aquaculture training program at Bunda College of Agriculture – University of Malawi 2000-2005: **Project Document**, July 15 2000
7. Mr. Eiriksson, G. Memo. Raise In Tuition fees at the University of Malawi. April 2001
8. BCA. Proposal for continued ICEIDA support to Bunda College: Aquaculture and Fisheries Science Programme beyond 2000
9. ICEIDA – Malawi: Bi-Annual Reports; 2001-2003
10. ICEIDA. Travel Reports (in Icelandic)
  - Björn Dagbjartsson, júlí 1995
  - Björn Dagbjartsson, febrúar 1996
  - Björn Dagbjartsson, janúar 1997
  - Björn Dagbjartsson, janúar 1998

- Björn Dagbjartsson, ágúst 1998
- Þórdís Sigurðardóttir, janúar 1999
- Björn Dagbjartsson, ágúst 1999
- Björn Dagbjartsson, janúar 2000
- Sighvatur Björgvinsson, janúar 2001
- Sighvatur Björgvinsson, september 2001
- Sighvatur Björgvinsson, febrúar 2002

**11. ICEIDA Newsletter**

- No. 6 1995,
- No. 7, 1996
- No. 10, 1999
- No. 12, 2001

**12. ICEIDA. Newsletter on developmental issues (in Icelandic) “Fréttabréf um þróunarmál”:**

- nr. 13, 1993
- nr. 14, 1993
- nr. 16 1994

**13. ICEIDA Annual Reports:**

- 1996, 1997, 1998, 1999, 2000, 2001, 2002

**14. ICEIDA. An Evaluation Study on ICEIDA’s Development Cooperation Projects in Malawi 1996**

**15. ICEIDA. An Evaluation Report on ICEIDA funded Regional Aquaculture Programme at Bunda College of Agriculture, University of Malawi 1998.**

**16. Aquaculture Course Development: Project description. CIDA 1995, In “Renewing our partnership January 14-17 1996: Anglophone Africa Symposium-Association of Canadian Community College”**

**17. BCA. Diploma/Degree in Agriculture (Aquaculture option) Curriculum. April 1993. University of Malawi – Bunda College of Agriculture**

18. Animal Science Department. Proposal for the Establishment of the Department of Aquaculture and Fisheries Science (DAFS). August 1997
19. University of Malawi Bunda College of Agriculture. **Strategic Plan 2000-2004**
20. Malawi Poverty Reduction Strategy Paper, 2002
21. Fisheries Department, Annual Report 2002
22. Department of Fisheries. HIPIC support to small scale fish farming. 2002-2003 Annual Report.
23. BCA. Proposal for continued ICEIDA support to Bunda College: Aquaculture and Fisheries Science Program Beyond 2000.
24. BCA. Bunda College Library – ICEDIDA Project: Assistance to the BC Library
25. BCA. Budgets, 2000-2003
26. Likongwe, J. and E. Kaunda. Strategic Plan for the Department of Aquaculture and Fisheries Science. August 1998
27. Andrew T.G., O.L.F. Weyl, M. Andrew 2003. Aquaculture Masterplan Development in Malawi: Socio-Economics Survey Report. Department of Fisheries.
- 28.

## **APPENDIX 5: PROJECT DOCUMENT**

## **APPENDIX 6: PROJECT PLAN**