

THE UNIVERSITY OF HULL

**POVERTY IN THE FISHERIES: A FRAMEWORK FOR ANALYSIS
AND INTERVENTION FOR LAKE VICTORIA, UGANDA**

being a Thesis submitted for the Degree of Doctor of Philosophy
in the University of Hull

by

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August, 2001

Abstract

The thesis is inspired by the poverty that has persisted among the fishing communities of Lake Victoria at a time of considerable cash inflow into the fisheries from the development of the fish processing industry. There has been need for an understanding of the poverty and what strategies would be most appropriate for its reduction. This thesis has attempted to respond to the need by identifying the nature and distribution of the poverty within the fisheries of Lake Victoria, Uganda, the factors responsible for it and the options for poverty reduction intervention.

The thesis examined the global and regional perspectives of poverty and wealth distribution, noting that wide disparities existed between the developed and the developing world and also between the developing countries themselves. A historical review of development policies and strategies revealed that while successive strategies were able to contribute to growth, their achievement towards poverty alleviation were less than satisfactory, hence the need for continually developing new strategies.

A background to Uganda's society and economy is provided, examining the demographic, political, environmental and economic conditions of the country. Uganda's development strategies are reviewed, highlighting the role of the Poverty Eradication Action Plan, Uganda's main strategy for implementing the policy of poverty reduction and wealth distribution. At the agricultural sector level, the Plan for the Modernisation of Agriculture has been formulated, followed by the National Fisheries Policy, aimed at providing a policy framework for the management and development of the fisheries.

An appropriate definition of poverty was formulated, considered relevant to the situation of Lake Victoria. The dimensions of poverty included inadequate basic necessities, low education and health achievements, a sense of insecurity and exposure to risk. The research methodology was enhanced by the examination of the Lélé Model of the Poverty–Environmental Degradation problem, the World Bank Model of Poverty Causation and the subsequent Lake Victoria Model developed in this thesis. It has provided a plan for the research, the consideration

of criteria and a data collection plan. The data collection instruments included secondary data search, key informant interviews and a sample survey based on a structured questionnaire.

The thesis identified all the four dimensions of poverty in the fisheries, provided poverty profiles with respect to the different activities, groups of people and regions in the fisheries, based on consumption poverty. Among the people identified to be in poverty were the labourers, fishers of *O. niloticus* and those operating with non-powered boats. In the post-harvest fisheries, large proportions of processors involved in salting and sun-drying, market stall and bicycle traders were in the poverty category. The ethnic groups most affected included the Samia, Basoga and Bakenye while the Districts of Jinja, Bugiri and Busia had the highest proportions of fishers in the poverty category. With respect to the other dimensions of poverty, the study showed that educational achievement was low within the fishing communities. The health status was poor, due mainly to the prevalence of malaria, diarrhoea, bilharzia and HIV/AIDS. There was a sense of insecurity within certain sections of the fishing community, due to leadership weaknesses within the local as well as the Government institutions. Some community members operated in a state of risk because they were vulnerable to episodes of income, health and education.

The causes of poverty in fisheries included weaknesses within the institutional and social environment, limitations in the technology available to the poor, resource degradation and unfavourable economic factors. The recommendations of the thesis for poverty reduction included strengthening of policies, developing links, improving capacities and increasing resources, to be applied at the levels of Central Government, Local government and of the community.

In view of the achievements of the methodology used on this thesis, involving reference to the models, it is recommended that future research should build upon this model approach, as it will continue to produce results, especially when attempting to forecast changes relating to interventions.

Acknowledgements

I would like to thank most sincerely my supervisor, Dr. Kevin Crean, Senior Lecturer at the International Fisheries Institute, the University of Hull (HIFI), who guided the work of this thesis through all its stages with a great sense of commitment. I wish to thank equally Dr. Keith Haywood, of HIFI, for the useful comments and advice he provided. The support I received from Dr. Ian Cowx, Director of HIFI and all other staff members is acknowledged. Dr. Steve Wisler of the Applied Statistics Center, offered useful help with the statistics.

Lake Victoria Environmental Management Project provided the funds, without which this PhD would have remained a dream. My special thanks go to Dr. F.L. Orach-Meza, National Executive Secretary, Uganda for all the arrangements.

I wish to express my gratitude to the Director, Fisheries Resources Research Institute, Dr. Richard Ogutu-Ohwayo, for providing the environment and all the necessary facilities for the research. My special thanks go to Dr. Fred Bugenyi former Director, FIRRI for nominating me for the training. The encouragement received from all other colleagues in the FIRRI 'village' is acknowledged.

I must thank most sincerely the following Socio-economics staff who participated in data collection and entry: Simon Kato, Agnes Nasuuna, Ivan Kyangwa, Joseph Gongga, Alice Atai, Anne Nyapendi and Henry Ochaya. Joyce Nakimbugwe is remembered especially for rushing to the field with additional questionnaires whenever the team ran short of them.

I wish to pay tribute to the people who gave me the information, namely the fishers, fish processors and traders for patiently enduring, but sometimes enjoying, the endless questions. I thank the Gabungas, Heads of LMCs and the District Fisheries Staff for their co-operation during the research.

At the house, my wife Jenneth took full charge while I was away, for which I thank her. I acknowledge the patience as well as the roles played by the children: Sylvie, Franklin, Cyrus, William and Ezekiel during this period.

Lastly, I must thank my Dad and Mum for the vision they had in setting me on this journey a long time ago. To them I dedicate this PhD.

Table of Contents

	Page
Abstract	i
Acknowledgements	iii
Acronyms	xiv
CHAPTER ONE: INTRODUCTION	1
1.1 Global Poverty Perspective	1
1.2 Poverty in Uganda's Fishery Communities	3
1.3 Research Questions	4
1.4 The Hypotheses	9
1.5 Aims and Objectives	9
1.6 Guide to the Thesis	10
CHAPTER TWO: BACKGROUND ON UGANDA	13
2.1 Geographical Indicators	13
2.2 Population	15
2.3 Politics and Good Governance	22
2.4 Natural Resources and the Environment	27
2.5 The National Economy and Poverty Alleviation	30
2.6 The Fisheries Sector	36
2.5 Conclusion	39
CHAPTER THREE: LITERATURE REVIEW	43
3.1 Introduction	43
3.2 Goals of World Development	44
3.3 Wealth Distribution	47
3.4 The Sub-Saharan African Context	48
3.5 Poverty and Income Inequality	51
3.6 Review of Strategies	52
3.7 Sustainable Development	54
3.8 Meaning of SD for Wealth Generation	55
3.9 Concept of Poverty	67
3.10 Poverty Indicators	70
3.11 Measuring Indicators	72
3.12 Causes of Poverty	74

	Page
3.13 Poverty Alleviation Strategies	79
3.14 Poverty in the Fisheries	84
3.15 Projects in the Fisheries	86
3.16 Conclusion	87
CHAPTER FOUR: RESEARCH METHODOLOGIES AND ACTIVITIES	90
4.1 Introduction	90
4.2 Literature Search	90
4.3 Conceptual Framework	91
4.4 The Lélé Model	99
4.5 The World Bank Poverty Model	100
4.6 The Research Model	103
4.7 Selection of Research Variables	110
4.8 Secondary Data Search	117
4.9 Field Data Surveys	118
4.10 Display of Data	125
4.11 Conclusion	126
CHAPTER FIVE THE NATURE AND DISTRIBUTION OF POVERTY IN THE FISHERIES	131
5.1 Introduction	131
5.2 Consumption Poverty	132
5.3 Educational Achievements	162
5.4 Health Achievements	171
5.5 Sense of Insecurity	175
5.6 Exposure to Risks	179
5.7 Conclusion	185
CHAPTER SIX THE INSTITUTIONAL AND SOCIAL ENVIRONMENT	189
6.1 Introduction	189
6.2 Fisheries Institutions	190
6.3 Social Service Institutions	204
6.4 Institutions for Infrastructure Development	211

	Page	
6.5	Local Institutions	215
6.6	Institutional Links	221
6.7	The Programme Approach	222
6.8	Conclusion	223
CHAPTER SEVEN: THE TECHNOLOGY OF THE POOR		226
7.1	Introduction	226
7.2	Characteristics of Production Technology	227
7.3	Fish Processing and Distribution Technology	235
7.4	Poverty Considerations in Technological Development	247
7.5	Conclusion	265
CHAPTER EIGHT: EFFECTS OF DEGRADATION OF THE FISHERIES RESOURCE BASE		269
8.1	Introduction	270
8.2	Characteristics of Fisheries Resource Degradation	272
8.3	Causes of Resource Degradation	281
8.4	Effects on Poverty	288
8.5	The Status of Fisheries Management	290
8.6	Relating Fisheries Management to Poverty	303
8.7	Lessons from Related Initiatives	304
8.8	Conclusion	308
CHAPTER NINE: ECONOMIC FACTORS IN POVERTY		312
9.1	Introduction	312
9.2	Effects of Major Economic Policies	312
9.3	Effects of the Fish Market	325
9.4	Financing for Fishery Activities	341
9.5	Economic Factors	355
9.6	Conclusion	361
CHAPTER TEN: CONCLUSIONS AND RECOMMENDATIONS		363
10.1	Identification of Poverty	363
10.2	Activities Associated with Poverty	365
10.3	Poverty Distribution within Groups and Districts	366

	Page
10.4 Causes of Poverty:	367
10.5 Poverty Reduction Strategies	370
10.6 Assessment of Policies	370
10.7 Lessons from the Models for Fisheries Management	371
10.8 The Research Methodology	373
10.9 Recommendations	374
REFERENCES	379
Appendix 1: KEY INFORMANT INTERVIEW SCHEDULE	399
Appendix 2: UNIT SURVEY QUESTIONNAIRE	409
Appendix 3: LIST OF DATA COLLECTION SITES	439

List of Tables

	Page	
Table 2.1	Total Population of Uganda, 1948 – 2000 ('000)	15
Table 2.2	National Coverage of Health Facilities, 1997	18
Table 2.3	Cumulative Reported AIDS Cases 1994 – 1998	19
Table 2.4	Admissions in Government-Aided Institutions 1995 –1999	20
Table 2.5	Export of Fish and Fish Products, 1993-1999	36
Table 4.1	Research Concepts and the Relevant Variables	111
Table 4.2	Choice of Research Instruments	113
Table 4.3	Sources of Secondary Data	117
Table 4.4	Identification of Poverty Clusters	120
Table 5.1	Poverty Rates by Employment Sector of Household Head, 1992-96 (UShs)	134
Table 5.2	Monthly Earnings of Operators of Fishing Units (UShs)	141
Table 5.3	Monthly Earnings by Mode of Craft Propulsion of Fishing Units (UShs)	143
Table 5.4	Monthly Earnings by Ownership of Boat by Fishing Units (UShs)	144
Table 5.5	Mean Monthly Earnings by Sex of Fishing Unit Operators (UShs)	145
Table 5.6	Mean Monthly Labour Payments by System of Payment (UShs)	146
Table 5.7	Mean Monthly Earnings of Fishing Units by Ethnic Group (UShs)	147
Table 5.8	Mean Monthly Earnings of Fishing Units by District (UShs)	149
Table 5.9.	Income Groups for the Different Categories of Fishers (%)	150
Table 5.10	Income Groups of Fishers for the Different Tribes (%)	151
Table 5.11	Income Groups of Fishers by Districts (%)	152

	Page
Table 5.12 Mean Monthly Earnings of Fish Processors (UShs)	154
Table 5.13 Categorisation of Fish Processors by Income Levels (%)	156
Table 5.14 Monthly Earnings of Selected Categories of Fish Traders (UShs)	157
Table 5.15 Grouping of Earnings of Selected Categories of Fish Traders (UShs) (%)	158
Table 5.16 Sources of the Main Food Items to the Landing Sites (%)	159
Table 5.17 Distances of Food Sources from the Landing Sites (Km.)	160
Table 5.18 Levels of Education of Fishery Unit Operators by Category (%)	166
Table 5.19 Levels of Education of Fishery Unit Operators by Tribe	168
Table 5.20 Levels of Education of Fishery Unit Operators by District (%)	170
Table 5.21 Multiple Response Frequencies of the Main Diseases Reported at the Landing Sites	173
Table 5.22 Fish Catch for Lake Victoria 1990 - 1999 ('000 tonnes)	180
Table 5.23 Main Threats to Fishery Activities (%)	184
Table 6.1 SWOT Analysis Table for the DFR	195
Table 6.2 SWOT Analysis Table for FIRRI	200
Table 6.3 SWOT Analysis Table for Local Governments	203
Table 6.4 SWOT Analysis Table for MH	207
Table 6.5 SWOT Analysis Table for MES	210
Table 6.6 SWOT Analysis Table for MWHC	214
Table 6.7 Leadership at Landing Sites	215
Table 6.8 Decision-Making at the Landing Sites	217
Table 6.9 Communication Methods at the Landing Sites	218
Table 6.10 SWOT Analysis Table for LMC	220

	Page	
Table 7.1	Proportions of Engines by Capacity	229
Table 7.2	Proportions of Boats and Engines by Year of Acquisition (%)	230
Table 7.3	Distribution of Gill Nets by Size	231
Table 7.4	Deployment of Boats by Type of Gear	232
Table 7.5	Types of Fish Processors by District (%)	239
Table 7.6	Average Number and Value of Equipment used in Fish Processing	240
Table 7.7	Respondents' Rating of Processing Equipment	240
Table 7.8	Average Weekly Quantities of Fish Processed (kgs)	242
Table 7.9	Proportions of Landing Sites and their Associated Infrastructure (%)	246
Table 7.10	Frequency of Extension Services Received by Respondents (%)	254
Table 7.11	Respondents' Familiarity with Research Work in Fisheries	260
Table 7.12	Perceived Areas of Research	261
Table 7.13	Reasons Why Research Did Not Benefit Work (%)	263
Table 8.1	Multiple Response Frequencies of the Limiting Factors to Fishery Activities	274
Table 8.2	Catch Rate and Standing Stock Comparisons between the 1967/71 and 1993/97 Surveys	275
Table 8.3	Comparisons of Species Abundance between 1967/71 and 1993/97 Trawl Surveys (%)	279
Table 8.4	Number of Fishing Boats on Lake Victoria, Uganda	282
Table 8.5	Areas of Conflict Among Fishers (%)	290
Table 9.1	Number of Industrial Fish Processing Firms, Total Approved Capacities, Fish Purchases and Nile Perch Prices, 1990 – 1997*.	317
Table 9.2	Perceptions of Effect of Policies on Fishery Activities	321
Table 9.3	Policies Perceived to Affect Fishery Activities	323

	Page	
Table 9.4	Ratings of Policy Effects on Fishery Activities	324
Table 9.5	Sex, Age and Educational Level Distribution of Traders in the Survey Sample (%)	328
Table 9.6	Distribution of Fish Traders by Number of Years in Trade (%)	331
Table 9.7	Reported Main Buyers from the Fishers at Landing Sites	332
Table 9.8	Trading Assets Owned by Fish Traders	333
Table 9.9	Weekly Mean Quantities of Fish Traded and Prices	334
Table 9.10	Hired and Family Labour and Weekly Payments by Type of Fish Trader	335
Table 9.11	Rating of Marketing Activities by Month	336
Table 9.12	Fresh <i>L. niloticus</i> Prices at Selected Landing Sites in Mpigi District, (UShs/kg)	337
Table 9.13	Sources of Capital for Fishery Operations (%)	342
Table 9.14	How Operating Costs are Shared Between Owner and Labourers (%)	343
Table 9.15	How Revenues are Shared Between Owner and Labourer (%)	345
Table 9.16	Utilisation of Earnings from Fish Work (%).	346
Table 9.17	Mean Number and Value of Wealth Items Owned by Fishery Operators	348
Table 9.18	Respondents Who Received Credit Over the Last Three Years (%)	350
Table 9.19	Respondents Who Kept Books of Account (%)	355
Table 9.20	Complementary Activities of Fishery Operators (%)	357
Table 9.21	Effects of Fishery Activities on Each Other (%)	359

List of Figures

	Page
Figure 3.1	59
Figure 4.1	98
Figure 4.2	99
Figure 4.3	102
Figure 4.4	104
Figure 5.1	142
Figure 5.2	155
Figure 5.3	164
Figure 5.4	174
Figure 7.1	234
Figure 7.2	241
Figure 7.3	248
Figure 8.1	272

List of Maps

	Page
Map 2.1 Administrative Map of Uganda	42

Acronyms

ACP	Afro Caribbean Pacific
ADB	African Development Bank
AFRP	Artisanal Fisheries Rehabilitation Project
ARTP	Agricultural Research and Training Project
CBO	Community-Based Organisations
CBR	Centre for Basic Research
CERUDEB	Centenary Rural Development Bank
CIFA	Committee on Inland Fisheries of Africa
CITES	Convention on International Trade in Endangered Species
COMESA	Common Market for Eastern and Southern Africa
DANIDA	Danish International Development Agency
DFID	Department for International Development
EAC	East African Co-operation
EPRC	Economic Policy Research Centre
EU	European Union
FAO	Food and Agriculture Organisation
FCSEP	Fish Commodity Systems Economics (Uganda) Project
FIRRI	Fisheries Resources Research Institute
FOE	Friends of the Earth
FOSRI	Food Science Research Institute
GEF	Global Environmental Facility
GMP	Good Manufacturing Practices
HACCP	Hazard Analysis of Critical Control Points
ICRC	Integrated Consultancies and Resource Centre (Pty) Ltd

IDA	International Development Association
IDRC	International Development Research Center
IUCN	International Union for the conservation of Nature
JICA	Japanese International Development Agency
KfW	Kredietanstalt für Wiederaufbau
KMFRI	Kenya Marine and Fisheries Institute
LMC	Landing Management Committee
LVEMP	Lake Victoria Environmental Management Project
LVFRP	Lake Victoria Fisheries Research Project
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MES	Ministry of Education and Sports
MFI	Micro-Finance Institutions
MFPEDE	Ministry of Finance, Planning and Economic Development
MH	Ministry of Health
MWHC	Ministry of Works, Housing and Communication
NARO	National Agricultural Research Organisation
NEAP	National Environmental Action Plan
NEMA	National Environment Management authority
NGO	Non-Governmental Organisation
NORAD	Norwegian Agency for Development Co-operation
OAU	Organisation for African Unity
ODS	Organisational Development Services
PEAP	Poverty Eradication Action Plan
PERD	Public Enterprise Reform and Divestiture Programme
PMA	Plan for the Modernisation of Agriculture
PSDP	Private Sector Development Program

PSV	Public Service Vehicle
RAFU	Road Agency Formation Unit
RFI	Rural Financial Intermediaries
RSDP	Road Sector Development Programme,
SAP	Structural Adjustment Programme
SD	Sustainable Development
SEDAWOG	Socio-economic Data Working Group
SIDA	Swedish Development Association
SWOT	Strengths, Weaknesses, Opportunities and Threats
TAFIRI	Tanzania Fisheries Research Institute
TQM	Total Quality Management
UBOS	Uganda Bureau of Statistics
UCB	Uganda Commercial Bank
UFFRO	Uganda Freshwater Fisheries Research Organisation
UIA	Uganda Investment Authority
UK	United Kingdom
UNBS	Uganda National Bureau of Standards
UNDP	United Nations Development Programme
UPE	Universal Primary Education
UPPAP	Uganda Participatory Poverty Assessment Process
USAID	United States Agency for International Development
UShs	Uganda Shillings
UWA	Uganda Wildlife Authority
WHO	World Health Organisation
WPTPA	Workshop on Political Theory and Policy Analysis
WTO	World Trade Organisation

Conversions:

1 Pound Sterling (£STG) = 2,400 Uganda Shillings (UShs)

1 Kilometre (Km) = 0.6 Miles (Mi)

1 Kilogram (Kg) = 2.2 Pounds (Lbs)

1 Litre (L) = 0.3 Gallons (Gal)

1 °Celsius (°C) = $(1.8^{\circ}\text{C} + 32)$ °Fahrenheit (°F)

CHAPTER ONE

INTRODUCTION

1.1 Global Poverty Perspective

Eliminating world poverty will continue to be a major challenge for the international community into the 21st century. Strategies of the future will not only have to increase resources for the developing countries through economic growth but also deal with the daunting issues of distribution and other social requirements in developing countries. The problem of poverty is global, with some 1.3 billion or nearly a quarter of the world's population characterised as poor, living on incomes of less than \$1 a day (UNDP 1997). Some 800 million of them are hungry or malnourished (DFID 1997). Most of the poor have limited access to information, to productive assets or to the market. Poverty is not only manifested in low monetary income and consumption but includes poor health and education and high risk and vulnerability and a sense of voicelessness and powerlessness among the poor (World Bank 1999). An estimated 150 million primary-age children either do not go to school or get inadequate education. Over 900 million adults are illiterate, of whom two thirds are women. About 766 million people lack access to health services and their children are at the risk of dying young from communicable diseases, accidents and injury. Many have no access to clean water. The poor often feel a sense of being discriminated against due to their ethnicity, geography, gender or disability. Generally, the poor believe that nobody listens to them and they have no way of making their voices heard in places where decisions that affect their lives are made. Gender disaggregation reveals that about 70% of the world's poor are women. Women are at greater risk and are also likely to die from causes related to pregnancy and child birth (UNDP 1997). They are often vulnerable to different forms of abuse, including domestic violence. Although poverty is a global problem, the vast majority of the poor are found in the continents of Asia, South America and Africa. The Sub-Saharan region is the most affected with an average of 45 to 50 percent of the region's populations living below the poverty line. This is a much

higher proportion than in any other region of the world except South Asia (World Bank 1996).

The resolve among the international community of nations to alleviate world poverty and achieve international development came some fifty years ago following the end of the Second World War. A New World order was emerging, envisaging better political and economic relationships among the nations of the world (DFID 1997). It was also a time when the developing world was going through important transition from colonial empires to independent nation-states. The creation of the United Nations and the Bretton Woods Institutions was part of a framework to deal with these relationships. The starting point then was that the majority of the human race lived in poverty. The disparity in wealth between nations was a matter of concern as the new international relationships envisaged nation-states of equals. The developing world accounted for 69% of the world's population of 3 billion, as by 1960.

In the subsequent period of the 1970s, considerable progress was generally achieved within the developing world, although the experiences varied from country to country. These early successes were due to growth, attributed to high level of investments in the countries. However, this could not be sustained, with the result that the 1980s became a "lost decade" for many of them. During this period, per capita incomes fell in many of the Sub-Saharan African countries. A number of internal and external factors accounted for this, including inadequate resources, weak economic policies and fluctuations in international prices for inputs and primary products. In Latin America, many of the countries stagnated, mainly due to the huge debt burden they had to cope with. The exception was within most of the Asian countries where there was remarkable growth due to the long-standing investments in education and the generally sound economic policies. Generally, however, the number of people in absolute poverty in the developing world increased over the period (World Bank 1990).

During the 1990s, while many countries continued with reform and restructuring policies, poverty remained the underlying problem. In Asia, although most countries continued to perform well during the first half of the 1990s, the financial crisis of 1997 exerted negative economic pressures that had serious implications for the incomes and services available to the populations of the

region. Argentina, Mexico and Peru were some of the Latin American countries that showed some increasing economic growth, largely as a result of expansion in foreign trade due to increases in exports. In Sub-Saharan Africa, poverty persisted and average growth rate fell from 3.8% in 1996 to 3.4% in 1997 due first to the heavy debt burdens the countries were facing. FOE (1998) reported that in Sub-Saharan Africa, debt service consumed between one-quarter and one-third of foreign exchange earnings, diverting resources from productive investment. For every \$1 received in aid grants in 1996, Africa paid back \$1.31 in debt service. Heavily Indebted Poor Countries were caught in a downward spiral of debt service that diverted resources away from economic development. Large debt-service payments meant that vital social services had to be sacrificed in order to meet debt payments, which made the poor in these countries even worse off. Secondly, the structural adjustment programs implemented to restructure their economies to become more free-market oriented and to control public expenditures had their own negative social effects. Other factors included the low commodity prices received by producers in these countries, the devastating effects of the El Niño weather phenomenon and the detrimental effects of civil strife in some of the countries.

1.2 Poverty in Uganda's Fishery Communities

A common feature of the poverty that has prevailed over all the periods is the internal disparities within the regions and between different sectors of activities and social groups within the countries. A clear example is from the experience of the Asian countries, where the vast majority of the rural poor remained untouched by the remarkable progress achieved by these countries over the last three decades. Different strategies have had to be adopted over the years to alleviate poverty in the different situations in which it has manifested itself as reported in the literature review section below. These strategies have, however, had limited impact on income distribution in these countries.

Uganda's Lake Victoria has supported a growing fishing industry over the last decade, producing average annual catch of 120,000 tonnes, consisting mainly of *Lates niloticus* (Nile perch), *Oreochromis niloticus* (Nile tilapia), *Rastrineobola*

argentea (mukene) and other minor species in that order of significance. In the 1990s, as a result of a package of economic policies, the sector experienced rapid growth of industrial processing of *L. niloticus* fillets mainly in response to the European Union export market opportunities, generating increased earnings in the industry (MFPED 1997). However, the full impact of these policies on the welfare of the fishing communities has remained largely unestablished.

There has been a growing concern that despite the increased earnings that have accrued from growth of the industry for over a decade, fishers have remained among the poorest sections of the communities, threatened by malnutrition and disease and enduring low standards of living. This situation has persisted despite the recent projects implemented in the sector. The situation is aggravated by the fears that the sustainability of the industry is threatened by various human and other causes. Several hitherto important species have disappeared, leaving behind a fishery constituted by only three main commercial species, namely the *L. niloticus*, *O. niloticus* and *R. argentea*. Quantities of fish landed have been declining over the years from 135,000 to 107,000 tonnes in 1993 and 1997 respectively, with juveniles constituting increasingly significant proportions of the catch (EPRC 1999). It is believed that if no action is taken, the fisheries will collapse. Ecological studies have attributed the decline to excessive fishing pressure, habitat damage and pollution of the lake, among other factors (Ogutu-Ohwayo 1998, Okaronon 1994).

1.3 Research Questions

Arising from the situation described above, it has been necessary to carry out the research on which this thesis is based. The broad question that forms the basis of the research is what the nature of poverty within Uganda's fisheries communities is and how amenable it is to policy instruments. Intervention measures to alleviate poverty that have been developed include the sector approach and projects. The sector approach was developed as a means of managing government's role in a sector as well as the aid to the sector. It involves putting in place a strategy for the sector that identifies the role of the state in relation to the private sector, both commercial and non-commercial. Where necessary, this

would be co-ordinated with strategies of other sectors. An expenditure programme would be drawn up, in which government and donor contributions are integrated and there is a common management framework as well as funding commitments from both the government and the donors. The sector approach was developed as an alternative approach to projects, in light of the shortcomings experienced with providing development assistance through projects alone. These included the difficulties for governments to manage the often large number of projects in a given sector; the danger of funding low priority activities and the failure of project benefits to be sustainable when fundamental problems existed within government and the broad policy environment. Akroyd and Duncan (1998) wrote: "A principal justification for the sector approach is to highlight these problems and provide a framework for government and donors to address them. Overall, the sector approach offers much of value to increasing the effectiveness of development aid through clarifying aims and strategies, and linking investment programmes with necessary policy, institutional and budgetary reforms. Central to the sector approach is a recognition of the time dimension and the need for recipients and donors to work progressively towards an improved framework for the sector and not to develop unrealistic expectations as to the rapidity with which this can be done." A lending instrument that can be used to implement the sector approach is the sector investment programme. The value of the sector approach in poverty alleviation programmes is its focus on the functioning of governments in addressing the policy and institutional questions that impact on the people's livelihood options and strategies.

Projects would then be formulated within the sector approach. Although the use of the term "project" in the general sense of a plan, design or scheme for doing things has been in use for several centuries, it was not until the beginning of the post-war period in the 1950s that development practitioners and academics have focused on projects as the units into which investments could be packaged. The World Bank has played a key role in developing and applying the project concept and most development agencies now apply it as one of the main methods of intervention, towards achieving such goals as growth and food security. A project could be defined as "a discrete package of investments, policies and institutions and other actions designed to achieve a specific development

objective within a designed period” (Baum & Tolbert 1985, p. 333). It may involve capital investment in civil works, equipment, or both. A project may also be implemented on the provision of services for engineering designs and construction. Strengthening of local institutions, including the training of local managers and staff and improvements in policies may be another project. Presently, for many external lenders, packaging of investment into distinct projects is an important feature of their lending operations.

A successful project usually unfolds in distinct stages, referred to as the project cycle, in which the stages are related to each other and follow a logical progression. Project identification is the first stage, when the project ideas are spotted and screened. It involves defining project objectives, based on an important development objective of the country, identifying alternatives and screening them to eliminate some and doing a pre-feasibility study to elaborate details for selected alternatives. The outcome of these exercises is presented in a project brief. The second stage is project preparation, when a feasibility study is done to provide decision makers with the basis for deciding whether to proceed with the project or not and for choosing the most desirable option or alternative following the initial screening. At this stage, the detailed work of project planning is also done. Appraisal is the third stage, usually undertaken by external agencies, to assess the overall soundness of the project and readiness for implementation. The fourth stage is implementation, when actual development or construction of the project, up to the point in which it becomes fully operational is undertaken. Selection of an implementation unit from among the different organisational alternatives is made, along with related issues of monitoring, co-ordination and supervision. The final stage is evaluation at the completion of project, to determine whether the project objectives have been achieved and to draw lessons from experience with the project that can be applied to similar projects in the future. Its purpose is to ascertain the reasons for a project’s apparent success or failure in order to pinpoint the features that deserve replication in future projects and identify the pitfalls to be avoided.

The success of project planning depends largely on the effectiveness of the project analyses carried out. These include technical analysis, addressing the issues of technical design of project, suitability of its size, location and timing

and the cost estimates. Secondly, there is need for financial and economic analysis to assess the contribution of the project to the company and the economy as a whole. This involves cost-benefit analysis and social cost-benefit analysis to determine the net present value of the project. Thirdly, social analysis is carried out to check that the outcome of the project is not detrimental to equity, to ensure acceptability of the project to the beneficiaries and their full participation in it, build local capacity and identify role of women in the project. Fourthly, institutional analysis is carried out covering the ministries, development banks, research organisations and the others, with a view to increasing the ability of the institutions to set clear development objectives and work effectively with their human, financial and other resources toward meeting them. Finally, environmental analysis is necessary to ensure sound management and use of the country's natural resources for economic growth. Eutrophication, overexploitation of fisheries resources and water pollution are examples of effects that projects have often created that lower the carrying capacity of the fisheries. There is need to assess the project for such effects in order that the fisheries meet the demands of the present and future generations on a sustainable basis. Other environmental impacts such as public health and occupational hazards also need to be considered in the analysis.

A number of projects have been implemented on Lake Victoria, Uganda, before (FAO 1999). The earlier ones included import of raw material and spare parts to enable resumption of production by the parastatal Uganda Fishnet Manufacturers (World Bank, IDA credit, 1983-84); ice plant and cold storage construction in Kampala (China, early 1980s); pilot pair trawling operations on Lake Victoria (China, late 1980s – mid-1990s); establishment of fish collection and processing centres in south eastern Uganda (Italy, mid 1980s – early 1990s); the Artisanal Fisheries Rehabilitation Project (EU, 1987 – 1991); the Fisheries Statistics and Information Systems Project (FAO/UNDP, 1988-1991) and formulation of a Fisheries Master Plan (ADB, 1997-99). Recent projects have been involved in strengthening fisheries institutions through provision of operational funding, equipment and training, research and formulation of a fisheries management plan, all of which have a bearing on poverty among the fisheries communities. Presently Uganda is involved in two major projects on Lake Victoria, both of

which are implemented on a regional basis between the three riparian states of Uganda, Kenya and Tanzania. The Lake Victoria Fisheries Research Project (LVFRP) is funded by the European Union and is part of a project the first phase of which commenced in 1989. Its long-term objective is to encourage co-operation on fisheries matters amongst the riparian countries and develop a fisheries management plan for the lake. The project's second phase, which began in 1995, is aimed at assisting in the development of a management framework for Lake Victoria fisheries and the knowledge base upon which such a framework must be founded. The five major components of this overall work programme include: (1) institutional strengthening through support of the LVFO committees on fisheries research and management and support for scientific meetings; (2) stock assessment involving acoustic, trawl and gillnet surveys and associated biological and statistical studies; (3) trophic web studies; (4) socio-economic assessments of management options and nutritional studies; and (5) training of project personnel. The Lake Victoria Environmental Management Project (LVEMP) is a Global Environmental Facility (GEF) and International Development Association (IDA)-funded project. It is in its first five-year phase before a longer-term, comprehensive programme beginning in 2003. It is aimed at the rehabilitation of the lake ecosystem and its overall objectives include: (a) maximizing the sustainable use of basin benefits through production of food, employment and income generation, safe water supplies and maintenance of disease-free environment; (b) conservation of biodiversity and genetic resources; and (c) harmonization of national management programmes in order to control and reverse environmental degradation. LVEMP includes a fisheries research component that seeks to provide information on the ecology of the lake and its basin, the biology of its flora and fauna, the impact of environmental factors on the lake system and socio-economic implications of use of the lake's resources, implemented by the Fisheries Resources Research Institute (FIRRI) (LVEMP 1996).

The question is on the basis of the lessons learnt, how can projects be made effective policy instruments in addressing the poverty within Lake Victoria's fishing communities thus promoting sustainable development in the fisheries.

The specific research questions are as follows:

- i. What is the nature of the poverty among the fishing communities on Lake Victoria, Uganda?
- ii. Is poverty associated with any specific activities and functions within the fisheries?
- iii. Which groups of people and which regions are most affected?
- iv. What factors account for the poverty situation within these groups and regions?
- v. What are the policy and program options for poverty reduction within the fisheries?
- vi. What is the relevance of the existing national and sectoral policies and programs in Uganda for poverty reduction in the fisheries?

1.4 The Hypotheses

The underlying hypothesis is that the market mechanism plays a role in creating poverty centres within the fisheries by influencing access to fisheries resources, the means of production and market for the different community groups and regions. The following specific hypotheses have been defined:

- i. Institutional failures contribute to poverty in the fisheries.
- ii. Social factors affect the distribution of fish wealth.
- iii. Technological limitations affect poverty alleviation within the centres.
- iv. Degradation of the fisheries resource base contributes to the poverty within the centres.
- v. Unfavourable economic factors affect the growth of the poverty centres.
- vi. The poverty centres are unattractive to development resources.

1.5 Aims and Objectives

The overall goal of the research is to contribute to the understanding that can be applied to the enhancement of the quality of life of Uganda's fishing communities of Lake Victoria. The research seeks to develop a framework for analysis and intervention towards alleviation of poverty and enhancement of

wealth distribution, while assessing Uganda's recent national, agricultural, fisheries sector and environmental policies and programs on Lake Victoria.

Specific objectives are to:

- i. Establish the nature of poverty among the fishing communities of Lake Victoria, Uganda.
- ii. Identify the activities within the sector associated with poverty.
- iii. Determine the distribution of poverty within the different groups of people and districts on the lake.
- iv. Identify and analyse the causes of poverty within the groups and regions affected.
- v. Identify the necessary types of intervention for poverty reduction, through policies and programs and their appropriate points of application.
- vi. Assess Uganda's recent poverty reduction policies and programs at the national level and in the fields of agriculture, fisheries or environment for their relevance and effectiveness for poverty reduction in fisheries.

1.6 Guide to the Thesis

This introductory chapter presents a background to the research, specifying the research problem, its goal and objectives and defining the significance of the thesis to the development of Uganda's Lake Victoria fisheries. It includes analysis of the different intervention approaches towards poverty alleviation, namely the sector approach and projects.

Chapter Two sets the background to Uganda's society and economy, examining the demographic, political, social and economic conditions of the country. Uganda's development strategies are reviewed, highlighting the role of the Poverty Alleviation Action Plan (PEAP) as Uganda's main strategy for implementing the policy of poverty 'eradication' and wealth distribution. At the agricultural sector level, the Plan for the Modernisation of Agriculture (PMA) has been formulated to operationalise PEAP. The role of natural resources and environment in the development process is reviewed. The chapter reviews the

status of Uganda's fisheries, its strengths, weaknesses and threats and examines the National Fisheries Policy (NFP), for its relevance to poverty alleviation.

Chapter Three gives the literature review, beginning with a discussion of economic development and how it has been achieved from a global perspective. The necessity of economic growth for poverty alleviation is highlighted, explaining the complexity of the mechanism through which growth translates into poverty reduction in the country. Sustainable development is introduced, explaining the factors responsible and how they could be dealt with through appropriate policy interventions. The review then examines the concept of poverty, which is necessary in order to deal with poverty effectively. The problem of lack of agreement among scholars on one correct scientific definition of poverty is noted and the implications of this for poverty-related policy formulation identified. The different poverty indicators are reviewed, to allow for proper assessment of the poverty situations. The causes of poverty are examined to develop a basis for formulation of appropriate policy responses. The difficulties often encountered in distinguishing indicators from the causes of poverty are noted, as many of the indicators are themselves also causes of further poverty within a vicious circle. The review looks at the different development strategies that have been applied to the problems of poverty and wealth distribution in the developing countries since the beginning of the post-Second World War period. An assessment of the strategies is attempted and views on the way forward are examined. Finally, the literature on projects as an instrument for the implementation of policies and strategies is reviewed, assessing their suitability and applicability.

In Chapter Four, the research methodologies are described. It begins with a model of the fish commodity for Lake Victoria before developing of a conceptual framework of poverty causation in fisheries, illustrated with appropriate model, to guide the research. This is basically a static representation of the key factors at play and their relationships. Comparison is made with alternative models, the Lélé and the World Bank models, and their strengths and weaknesses highlighted. Selection of variables for data collection is made by formulating operational definitions to reflect the different concepts in the research. The exercise would help to identify the appropriate measurable variables for use in

data collection to represent the concepts being studied. Choice of research instruments, namely secondary data search, key informant interviews and field surveys is described. This is to ensure that the right instruments are used in collection of the different data types. Variables for secondary data search are identified, as well as the sources of published data and records. These include reports of Government institutions, Aid Agencies and Non-Governmental Organisations (NGOs). The organisation of field surveys at two levels, namely the community and the unit levels, using different interview schedules is described. Design of sampling scheme, the process of developing the questionnaires and testing them on a pilot survey and training of interviewers and decision on target respondents for the surveys are explained. Relevant experiences in the field on data collection are reported. Display of data, using primarily the SPSS package to generate different statistical outputs including frequencies, central tendencies and relationships in the parameters is reported.

Chapter Five sets the results and analysis. Based on the findings of the research and other related sources, the manifestations of the poverty and income disparities within the fisheries are described. The variables to be used include per capita income, household consumption, health status, level of education, ownership and access to resources, productive assets and wealth and access to decision making. Comprehensive use of the thesis model, as well as other models for analysis to assess the role of the different poverty factors, namely the institutional framework, status and access to resource base, financing, the market mechanism, economic factors and social conditions of production.

Chapters Six to Nine provide data on the causes of poverty, covering the institutional and social environment; the technological factor; the resource availability and the economic factor, covering also market and financing aspects. Chapter Ten provides the conclusion and the recommendations of the thesis.

CHAPTER TWO

BACKGROUND ON UGANDA

Uganda was once described by Sir Winston Churchill as the “pearl of Africa” in his book in which he says “ ... I was immensely struck with its excessive beauty ... wherever I strolled I saw nothing but richness” (Churchill 1908 p. 49). Today a century down the road, how has the pearl done? This chapter is intended to discuss the background to Uganda for the purpose of providing a context to the thesis. It analyses aspects chosen for their relevance to the issues of poverty and sustainable development and in particular to the fishing communities of Lake Victoria. Areas examined include the geographical characteristics of the country, its population, the natural resource base, issues of governance and development and finally an introduction to Lake Victoria’s fisheries. Focus is directed on policies, their relevance and the success of their implementation.

2.1 Geographical Indicators

Uganda is a Sub-Saharan country, situated within the Great Lakes region of Africa. It borders Kenya to the east, the Sudan in the north, the Democratic Republic of Congo (DRC) and Rwanda to the west and the Republic of Tanzania to the south. It lies within 4⁰ 12’N and 1⁰29’S Latitude and 29⁰ 34’E and 35⁰ 0’E Longitude (Times & Bartholomew 1989). Topographically, much of Uganda can be classified as a plateau, with numerous small hills and valleys and extensive savannah plains. It lies in a cradle of mountains, with Mt. Elgon on its eastern border with Kenya, Mt. Moroto in the north-eastern and the Rwenzori Ranges in the south-western side. The entire country lies 600 metres above sea level generally sloping from south to north. Its lowest area in the north is about 620 metres, in the Albert Nile region, from where River Nile flows out of the country on its journey to the Mediterranean Sea. The highest part of the country is found at the Mt. Rwenzori peak in the west, estimated at 5,110 metres above sea level. Its total surface area is 241,038 square kilometres (sq. km.), of which 197,097 sq. km, or 81.77% is land and 43,941 sq. km. or 18.23% is area under water and swamps. It shares Lake Victoria with Kenya and Tanzania, Lakes Albert and

Edward with DRC. Lakes Kyoga, George, Bisina and the minor lakes, numbering about 160, are entirely within the boundaries of Uganda. There are two major rivers in the country, namely Rivers Kagera and the Nile but there are many smaller ones that drain into these as well as into the lakes and swamps.

The climate of Uganda is generally described as a 'modified tropical' climate consisting of three sub-climatic zones differentiated mainly by altitude and rainfall. These zones include the "Lake Region", monitored from the Entebbe weather data station, which is warm and generally wet the year round. The "Northern Savannah" is monitored from the Gulu station and is hot and dry and the "Southern Highlands", found around Kabale, is cool and wet. Temperature variations are little through the year, ranging between 15 to 30°C between the wet and dry seasons. Much of the country lies in the so-called "Interlacustrine Region" (between the lakes) of Africa. This region receives abundant rainfall and is rich in tillable land, a major determining factor in the large human settlement of the area. The rains are received mainly between the months of March to May and October to November. Rainfall is estimated at between 750 to 2,000 mm/year. Vegetation in Uganda is diverse as a result of the different micro-climates of the country. Vegetation zones can roughly be associated with the climatic regions mentioned above, namely the Lake Region, the Northern Region and the Highlands of the south-west. The south is thickly forested while the north is largely Savannah with some semi-desert areas in the north-east, in the Karamoja region.

The significance of these geographical features of Uganda is that they constitute important resource endowments providing potential for a wide spectrum of economic activities. The country's topography, temperature and rainfall ranges allow for a variety of agricultural activities. The water resources provide support to a vibrant fisheries industry and the high potential for aquaculture production is widely recognised. Some minerals, notably gold, copper and cobalt have been associated with the mountains and hills of Uganda and have supported various mining activities over the years. Tourism potential has remained high, despite setbacks that often result from cases of armed conflict in the country.

2.2 Population

Systematic censuses have so far been conducted five times in the history of Uganda, namely in 1948, 1959, 1969, 1980 and 1991. As the exercise is intended to take place every 10 years, there should have been one in 2001 but this has been postponed to a date to be announced later, due to the presidential and parliamentary elections taking place during the year. The results of the censuses are presented in Table 2.1

Table 2.1: Total Population of Uganda, 1948 – 2000: ('000)

Year	1948	1959	1969	1980	1991	2000*
Population	4,959	6,537	9,353	12,636	16,672	22,210

Source: UBOS 2000b p. 14.

* Projection

The 1991 census revealed that Uganda had a population of 16.7 million and this is projected to have reached 22.2 million in June, 2000 (UBOS 2000b). The sex composition is reported to have been changing over the periods. Between 1948 and 1969, the Sex Ratio, defined as the number of males per 100 females, rose from 100.2 to 101.9 respectively but thereafter, it began to show a declining trend, falling to 98.2 in 1980 and to 96.5 by 1991. Since 1948, the population has been doubling every 25 years, with the highest annual growth rate of 3.9 in the 1959-69 inter-census period and thereafter, declining gently to 2.5 for the 1980-91 period. The declining trend in population growth rate is expected to continue for a number of reasons. First, the Total Fertility Rate, which measures the average number of children born by women of all age groups in the country, had been consistently high at over 7 children per woman for several decades but began to decline from 7.1 in 1991 to 6.9 in 1995 (UBOS 2000b). This may be attributed to the influence of family education and other family planning programs in the country. Secondly, the Crude Birth Rate, which is the number of live births per 1,000 of the population, was 52.1 in 1991 and fell slightly to 48 by

1995. However, the Infant Mortality Rate, defined as the number of children who die before their first birthday per 1,000 live births, has declined from 122 in 1991 to 97 in 1995, attributed to successes in health programs. This is a desirable development but it works towards increasing population growth rate. The population density in 1991 was 85 persons per sq. km. for Uganda, with Northern Region being the least densely populated at 38 while Eastern had the highest, at 148. The shoreline districts of Lake Victoria, excluding Kampala City and Jinja District, had average population density of 121, which was higher than average. The effect of the high population density is to limit availability of land per person. In addition to the high population growth rate and density, immigration has been occurring. Some 3.6% of the persons enumerated in 1991 were non-Ugandans, mainly from other countries in the region. Observations showed that while some of the immigrants take up employment in the commercial sector, they also exert additional pressure on the country's natural resource base. The open access regime in the fisheries of Lake Victoria has made it more vulnerable to exploitation by such immigrants than the farmland, where ownership is defined and access controlled (MAAIF 2000, MAAIF and MFPED 2000).

The main constraints faced by Uganda's population are in the areas of poverty, poor health status and low levels of education. Despite its impressive growth rates in the 1990s, Uganda was among the world's poorest countries, ranking 149th out of 175 countries in 1998 by the Human Development Index (UNDP 1998). Consumption data indicate that 44% of the population did not meet their basic needs of food, shelter, clothing health and education by 1998 (MFPEP 1999). Greater poverty is experienced in the rural areas, where 80% of the people live in absolute poverty (UNDP 1998). Absolute poverty line consists of the food poverty line and an estimate of non-food requirements. Analysis has revealed that Uganda's poverty is associated with land shortage, low levels of education and lack of skills, ill-health, limited access to credit, to basic productive assets and to markets for their produce. A household headed by a female widow or an aged person would be among the poorest. Persistent security problems have exacerbated the poverty situation in parts of Northern and Western Uganda. The Poverty Eradication Action Plan (PEAP) was formulated in 1997 for the purpose of implementing Government's strategy of eradicating poverty. Its focus has

been on increasing the incomes of the poor, improving their living standards and providing good governance. Provisions under PEAP are discussed in further detail in paragraph 2.5 below. In order to aid assessment of poverty trends, the Consumption Per Adult Equivalent (CPAE) was developed as a measure to establish the poverty line for the different regions of Uganda and CPAE trends have been monitored since 1992/93 financial year (Appleton 1998). Using the data from the Integrated Household Surveys carried out by the Uganda Bureau of Statistics in 1992/93, 1993/94, 1994/95 and 1995/96, a declining poverty trend between 1992/93 and 1995/96 was, however, revealed with consumption per capita rising by 16% over the period. Income per capita increased from UShs 151,081 in 1990 to UShs 338,943 in 1997 (UNDP 1998). The “Entandikwa” credit scheme, which is discussed in detail in Chapter Nine, was launched to give opportunities to the poor to gain access to better incomes (MAAIF and MFPED 2000). The scheme was introduced by Government, in conjunction with the World Bank, in 1994/95 financial year with the aim of assisting poor people to start small enterprises to alleviate poverty. However, the success of the scheme has been hindered by the inefficient management undertaken by the organs of Government involved. Much of the loan did not go to the poor but to influential people who were relatively rich. The activities funded with the credit were not the planned activities, due to the arbitrarily small amounts released to users and there has been high rate of defaulting among the borrowers. The Land Act was passed in 1998 with the objective of improving the tenure, ownership and management of land (Government of Uganda 1998). However, the acceptability of the Act among the grassroots has not been forthcoming due to a strong misconception that it was a ploy by the rich people in Government to take over their land. As a result, its implementation has been slow.

Turning to the health status of the people, the National Health Policy of Government focuses on improving the quality of life and the human capital of Ugandans, particularly the poor, through provision of basic health care services and safe water supply. Illness is considered a dimension of poverty and is an outcome of several factors. These include inadequate incomes for one to feed well and pay for health services, lack of education towards good health practices

particularly hygiene, lack of health related information, inadequate and unavailable health services, poor water supply and lack of good sanitation facilities (MFPED 2000b). The strategy is to restore the functional capacity of the country's health services, involving revitalisation of infrastructure for control of preventable diseases and extension of financial support to NGO facilities.

Table 2.2: National Coverage of Health Facilities, 1997:

No. of Hospitals	No. of other Health Units	Population per Unit	Population per Bed
102	1,535	12,485	798

Source: UBOS 2000b p. 63.

Although the current estimate of life expectancy in Uganda has shown a modest rise from 47.8 in 1991 to 50.4, Uganda's population still endures low health standards (UNDP 1998). The proportion of the population that has access to health services has risen from 42 to 51% between 1996 and 1998. However, there is still a shortage of qualified medical personnel in the services, given by the ratio of doctor to persons of up to 1:27,140 (UNDP 1998). Because of this high ratio, many patients can only either see lower level medical personnel or are even unable to see any. As a result of this vacuum, there are still many traditional healers who are able to operate in the country. Although these are supposed to be regulated by the Medical Service, in practice they are not adequately monitored and controlled and have been responsible for some unethical or even criminal health practices.

For over a decade now, the Government has pursued a strong and open AIDS policy involving education and sensitisation. A number of International Agencies and NGOs have participated in the programs, providing sensitisation and post-test support to infected persons. The Aids Commission has been put in place to co-ordinate these activities. The result is that some 60% of the population is aware of the HIV/AIDS and its mode of spread. The number of

reported cases is said to have stabilised in the period 1994 to 1998 as a result of these programs (UBOS 2000b).

Table 2.3: Cumulative Reported AIDS Cases: 1994 – 1998:

Year	1994	1995	1996	1997	1998
No. of Reported Cases	46,120	48,312	51,344	53,306	54,712

Source: UBOS 2000b p.58

However, it is estimated that over 500,000 people have since died of AIDS in Uganda and up to 2 million, or 10% of the population, are infected with HIV, the virus that causes AIDS. Approximately 70% of these are in the economically most productive age bracket of 15-45 years. In the age-bracket 15-25, girls are said to be six times more affected than their male counterparts, with serious implications for reproduction. The impact of the high rate of HIV/AIDS infection in Uganda is that the associated opportunistic infections have exerted considerable pressure on the limited health facilities and services. It is also estimated that in every four professionals, one is infected, which poses a serious threat to the scarce professional manpower in the country and could slow down the country's development process. AIDS in Uganda is also often linked with poverty and culture. MFPED (2000b p.80) reports: "In some parts of the country, single women ... cannot get access to land; finding a husband then becomes a matter of survival and in doing so they take risks which they would otherwise avoid." Other threats to health in Uganda include malaria, cholera, bilharzia and tuberculosis.

In the area of water supply, progress has been made to increase access to safe water from 15% of population in 1986 to 33% in 1995 (UNDP 1998). Both rural and urban areas have registered improvements in access to safe water. However, by 1998 54% of the population were still without access to clean drinking water. A breakdown of the figures show that 72% of the rural and 42% of the urban populations still lacked access to clean drinking water. Progress has also been

achieved with respect to sanitation programs, with support of donors, resulting in improved access to sanitation, which rose from 32% in 1985 to 55% in 1995. However, 6% of the urban and 48% of the rural population still do not have access to sanitation facilities. It is the policy of Government to provide safe water supply and hygienic sanitation facilities for the entire population by the year 2015, with an intermediate target of rural safe water coverage of 81.6% by 2003. District Water Conditional Grants amounting to US\$ 20 billion for the financial year 2000/01 have been put in place for the purpose, to supplement on-going donor funded projects in the districts.

Education is considered a key tool in providing intellectual, cultural and social development of a society. It is also essential for producing the manpower required for development of the country. However, Uganda's population is characterised by low levels of education. In 1999/00, adult literacy rate stood at 65% (UBOS 2001c). Table 2.4 gives the number of students admitted at the different educational stages. The problem revealed by Table 2.4 is the large proportion of students who do not go beyond the Primary level. A similar pattern is repeated between subsequent educational stages. The large number of drop-outs from the educational system is a matter of concern for poverty alleviation, as will be discussed in Chapter Five.

Table 2.4: Admissions in Government-Aided Institutions: 1995 –1999:

	1993	1994	1995	1996	1997
Primary 1	591,957	628,223	672,562	817,662	2,159,850
Secondary 1	62,000	77,000	79,333	79,131	93,684
Secondary 5	11,280	12,000	13,465	n.a	22,362
University	2,280	2,125	4,419	5,018	4,053
Training Inst.	4,706	6,031	8,931	n.a	n.a.

Source: UBOS 2000b p. 28.

To address the problem of inadequate education, Government introduced the policies of liberalisation and Universal Primary Education (UPE). Under the former, provision of education was opened to the private sector, with the Government continuing to ensure that minimal standards are adhered to by the private schools through licensing and inspection, carried out by the Ministry of Education and Sports. Under UPE, Government decided in 1996 to provide free primary education for up to four children from each family. It is seen as a major strategy for enabling poverty eradication in the long run. UPE forms the central core of the Government's Education Sector Investment Plan (ESIP) 1997-2003, formulated to implement the 1992 Government White Paper on the Education Policy Review Commission Report. The immediate effect of introduction of UPE was to more than double the primary school enrolment from 2.6 million in 1995 to 5.3 million in 1997. This has, however, created problems of inadequate classrooms, teachers and scholastic materials to cope with the upsurge in enrolment. Classroom/pupil ratio rose from about 1:45 in 1995 to 1:118 in 2000. During the same period, teacher/pupil ratio fluctuated between 1:35 and 1:62 (UBOS 2000b). Pupil/textbook ratio rose to 6:1. This situation created fears of collapse in quality within the education system as a result of UPE. A recent study reports "The village of Beta in Kalangala District has one school. The school is in bad shape, the classrooms have dust and jiggers and the pit latrine is no longer safe for the children to use. Because the structures are not enough, children have to read from under a tree or from a nearby church" (MFPED 2000c p. 62). To avert this kind of situation, primary education has now become the focus of Government's education programs, utilising 70% of the education budget for the year 2000/01 on classroom construction, teacher recruitment and training and provision of teaching materials (MFPED 2000b). There are no data on the number of classrooms that existed prior to UPE by 1995 but Government now plans to construct 20,200 new classrooms and complete 3,300 previously incomplete ones by the end of the financial year 2002/03 to achieve a target reduction in classroom/pupil ratio to 1:79. Even when this is achieved, some 45% of the classes will still be without classrooms. Furthermore, since the classroom construction program was decentralised to the districts, lack of capacity within the districts for planning and implementation of this huge and rapid program is already posing a constraint. MFPED (2000b) reports that the target for teachers is

to train and recruit to reduce the teacher/pupil ratio to 1:47 by 2002/03. The target for textbooks is to bring the textbook/pupil ratio down from the current 1:6 to 1:3 by 2002/03. Education has been allocated 27% of the total national budget for the year 2000/01 and apart from Government resources, the main donors to the UPE programme include the World Bank and the United Kingdom through the Department for International Development.

As indicated by the sex ratios above, women constitute about 51% of Uganda's population and 23% of them are within child-bearing age. A large proportion of the women lives in the rural areas where they constitute about 75% of the total agricultural labour force. However, only 7% of them own the land they work on (UNDP 1998). Most of them have access but not control over land or even what is produced on it, although their labour is utilised for the production. About 52% of the women aged between 15-49 are illiterate. This is because prior to the introduction of the UPE policy in education, parents faced with high school fees and unable to pay for all their children often gave priority to boys' schooling over that of girls. The lower level of education and higher illiteracy among women than men makes it difficult for them to secure formal employment or benefit from new technological advances (UNDP 1997). Maternal mortality has been reduced from 1,200 per 100,000 live births in 1993 to 506 in 1995, a reflection of improved antenatal and delivery care services. The Government's gender and development policy focuses on promoting women's economic and political empowerment and there are constitutional provisions that mandate a minimum number of women-held parliamentary seats, one third women's representation in all local government councils and special provisions for admission of female students into government-aided universities. A few women have taken advantage of the opportunities presented by these provisions but the full impact in realising the potentials of Ugandan women has not yet occurred.

2.3 Politics and Good Governance

Uganda operates under a "no party" political system, following a ban on political party activities with the coming of the National Resistance Movement Government into power in 1986 through a five-year bush war against the then

elected Government. The argument was that much of the political instability and civil strife seen in the country since independence from Britain in 1962 was the result of political parties functioning incorrectly. The main parties at the time, namely the Uganda Peoples Congress (UPC) and the Democratic Party (DP) were said to be structured heavily along religious and tribal lines and had consequently failed to bring about unity among the people of Uganda. In June 2000, the people decided to continue with the “movement” type of government, as opposed to political parties, in a referendum that was widely boycotted by multi-party supporters as a violation of their fundamental right of association. Under the movement system, leaders were to be elected on the basis of their “individual merits” as opposed to any party policies.

The earlier part of Uganda’s post-colonial history, from 1971 to 1986, had been characterized by political turmoil and civil strife which resulted in loss of close to a million lives, destruction of property, economic mismanagement and run-down of social and economic infrastructures and institutions. That period is said to be largely responsible for Uganda’s present poverty and low level of development. The country has been involved in pursuing the main political policies of building democracy, decentralisation and restoration of the rule of law. The aim is to provide a political atmosphere conducive for the respect of human rights and for development. The underlying precondition for all this is peace and security of people and their property, to which the Government is committed.

The key element of the democratisation process is the provision for regularly elected leaders at all levels under the Local Council system of governance. Local Councils have been established as part of the decentralisation process in Uganda. The system of Local Government in Uganda is based on the District as a unit under which lower Local Government and Administrative Units are established. The Local Governments Act, 1997 provides that the Local Governments in a District in a rural area shall include the District Council and the Sub-county Councils. The Local Governments in a City shall be the City Council and the City Division Councils. In a Municipality, the Local Governments shall be the Municipal Council and the Municipal Division Councils. Lastly, the Local Government in a town shall be the Town Council (Government of Uganda 1997).

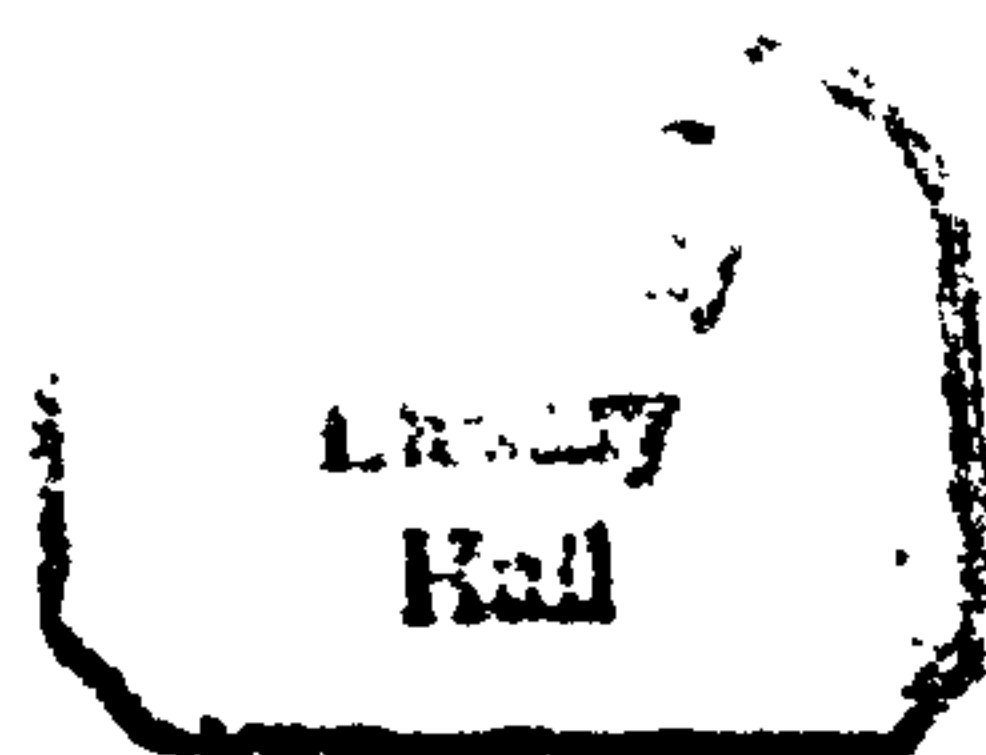
The functions of the Local Government Councils are a) to exercise all political and executive powers and functions; b) provide services as it deems fit, with the exception of the functions, powers and services vested in the Central Government; c) protect the Constitution and other laws of Uganda and promote democratic governance, and d) ensure the implementation and compliance with Government policy.

As a background to the decentralisation in Uganda, historically, the centralist approach to governance had been used, where decision-making that affected local level service delivery was dominated by the Central Government. This approach was, however, not able to effectively deliver services to the grassroots. Furthermore, the Centre could not fully appreciate the needs of local people adequately in order to address them. To correct this trend and to establish democratic governance, the Government passed the Decentralisation Statute, 1993 the main objective of which was to devolve powers from the Centre to the districts and lower levels of administration, as a means of achieving greater participation and more accountability at local levels of governance. At present, there are 52 districts in Uganda (see Map 2.1). Under the Statute, districts are expected to formulate their own development plans, based on local aspirations and resource base, and thus promote participatory development planning and implementation. The local plans and programmes are to be eventually integrated into the national plan. The Central Government line ministries became responsible for the co-ordination of development plans made by Local Governments, the setting of national standards and priorities as well as the preparation of national policies. Under the Statute, districts and lower levels of Government listed above are allowed to retain parts of their revenues for their operations. However, since the revenue bases for many of the districts are small, they are supplemented by grants disbursed from the centre.

Some of the improved services in health and education mentioned in paragraph 2.2 above are said to be attributed to better deliveries, a benefit of decentralisation (MFPED 2000b). Improved feeder road maintenance in virtually all the districts is perhaps the best example of success under decentralisation. However, while some of the benefits of decentralization are already being realized, some constraints have also been encountered. First, there

is lack of human resource capacity to formulate and implement development programs at the district level. In particular, many of the new districts located in the remote areas without infrastructure and social amenities have been unable to attract qualified and experienced personnel. Recently the Government has introduced a new policy of deploying university graduates at the sub-county level, identified as the entry point for provision of extension services to the grassroots. The response to these opportunities from graduates has been slow, despite the high unemployment rates among graduates in Uganda today. Secondly, there is inadequate resource base within the districts as a result of the limited capacity to generate local revenues. Consequently, most districts still depend heavily on transfers from the centre. Lack of basic infrastructure, databases and facilitative equipment are also a constraint. Communications within and between the levels have also been a constraint, due to lack of clear mechanism, facilities and infrastructure. While decentralisation is intended to generate greater participation from beneficiaries at the lower levels, in practice, the mechanisms for participation are often unclear and the genuine participation particularly of women and other disadvantaged groups in the development process is not ensured (UNDP 1997). There is also often a conflict of interest between the lower and higher levels. This may involve sharing of power and allocation of resources between the levels. Mechanisms need to be put in place to resolve these conflicts.

Other elements of the democratisation process include strengthening the electoral process for representatives to parliament and the direct election of the president through adult suffrage. A permanent Electoral Commission has been put in place for this purpose. However, the recent experiences with the Presidential Elections of 2001 showed how ill-prepared the Commission was in terms of funding, facilities and expertise. The election process experienced problems with scheduling of activities, the voters' registers and voters' cards among others. A Constitutional Court presided over by the Chief Justice and a panel of Judges has also been put in place to address any grievances arising from election exercises. In the Presidential Elections of 2001, the final verdict of the elections was decided by this Court. Although the incumbent had won the elections, the electoral process had been marred by so many irregularities that the validity of



the results could not be immediately established. A presidential candidate challenging the incumbent, therefore, petitioned Court to nullify the results and order fresh elections. However, the Court ruled that despite the irregularities, the voting still reflected the true wish of the majority of Ugandans and consequently upheld the result in favour of the incumbent.

On strengthening of the rule of law, the problems have included weak and outdated laws, lack of capacity and rampant corruption within the police and the judiciary. Parliament has been working to ensure that weak and outdated laws are improved or replaced. The judiciary has been strengthened through appointment of more judges and improvement in their terms of service and facilities. However, the police have not been adequately supported. The inadequate number of policemen, their low remuneration and poor working facilities means that criminal cases cannot be adequately identified, investigated and prepared for prosecution. The Uganda Human Rights Commission has also been put in place to oversee the observance of human rights in the country. A few Non-governmental Organisations (NGOs) are also involved with advocacy and sensitisation in the field of human rights. The training and sensitisation has been targeted at the army, the police and the prisons staff as well as other potential abusers of human rights.

A major element of good governance is ensuring transparency and efficient use of public resources. One of the biggest problems facing the Government is corruption and lack of accountability by public officers at different levels. Government has expressed commitment to eliminating corruption in the fight against poverty as the practice diverts resources away from poverty eradication programs. In order to achieve this, relevant state organs including the Criminal Investigation Department of the Uganda Police, the Ministry of Ethics and Integrity and the Inspector General of Government are being strengthened and the general society sensitised against the dangers of corruption. However, there have been little success and Uganda still ranks among the world's top three most corrupt nations.

Lastly, insecurity has been another governance issue of concern for poverty eradication. There are two main regions of Uganda, which have been embroiled in armed conflict with Government over long periods. In the North, the conflict

has been running since 1987, displacing people and deterring any form of economic life in the region with the result that people of the Districts of Gulu and Kitgum live in abject poverty. In the West, the conflict has been running for about seven years now, displacing people and disrupting activities in Kasese, Kabarole and Bundibugyo Districts. These conflicts have also diverted public resources that could have been used on poverty alleviation programs. Government is under considerable pressure from the public to find solutions to these long running conflicts, including holding dialogue with the parties concerned. A related problem is that of cattle rustling in Eastern Uganda. For several years now, the Karimojong, who have been allowed to keep large quantities of arms within their communities for the purpose of home protection against external cattle rustlers from across the borders, have turned these guns on communities in the neighbouring districts of Soroti, Kumi and Kitgum and used them to rob hundreds of herds of cattle. This has caused considerable destabilisation and disruption in these areas and Government is now taking steps to withdraw the arms from the communities.

2.4 Natural Resources and the Environment

Uganda's natural resource base is varied and generally said to be rich. Soils are largely fertile and agriculture supports the overwhelming majority (80%) of the Ugandan population, most of whom are subsistence farmers. Because of the differing ecological zones, forests and other forms of vegetation are extremely diverse. Biological diversity is generally still high in many of these areas. The country is also endowed with lakes and rivers, fish and wildlife, hydropower and minerals. However, this high natural resource endowment is threatened by natural causes like climatic changes but primarily by human activities. Agriculture and indeed the entire Ugandan economy are dependent on the sustainable productivity of the natural resource base. Uganda is believed to have a comparative advantage in agriculture because of its soils, water, climate, and low cost labour (MAAIF and MFPED 2000). However, as a consequence of the on-going high rate of natural resource degradation, this comparative advantage could soon be lost. A high rate of growth of 6% per annum in GDP based on agricultural activities, a high population growth rate of 2.5% per annum and a

high population density of 85 persons per sq. km. are believed to be exerting tremendous pressure on the natural resource base. In order to expand the country's export base, the Government has, from mid-1980s, been promoting a policy of diversification from the traditional export crops of coffee, cotton and tea to include non-traditional export crops, particularly maize and beans. Since their production is land-intensive, the result has been expansions in acreage of cropland. However, given the ineffective regulatory mechanisms in place, these expansions have often involved destruction of forests, woodlands and pasture. Wetlands have also been drained as part of land reclamation to grow crops. Other forms of environmental degradation in the country include loss of biodiversity, species introductions, pollution, destructive fishing and generally poor sanitary practices.

It is the goal of Government that development is made environmentally sustainable. Government has been trying to focus on specific activities aimed at addressing the priority environmental problems identified during the development of the National Environmental Action Plan (NEAP). Formulated in 1995, NEAP consists of a National Environmental Policy, an Institutional Framework for Environment Management, and an Environment Bill. The environmental policy provides for sectoral development strategies to take into consideration priority environmental concerns relating to land degradation, deforestation, loss of wetlands and dwindling fish stocks. The policy also emphasises strategies cutting across sectors by addressing, for example, the need to control population growth and enhance the security of land tenure. Finally, it advocates for environmental education and a system of environmental impact assessments as essential means of promoting rational resource use. The Environmental Bill, which was passed in 1995, provided for the establishment of the National Environmental Management Authority (NEMA) to co-ordinate the implementation of the NEAP through sectoral ministries and serve as a central environmental policy advisory body. Government has also been committed to rehabilitation and management of conservation areas, revitalisation of the tourism industry and empowerment of local governments and communities to manage and benefit from the sustainable use of natural resources. To achieve this, a program to strengthen the capacity of the Uganda Wildlife Authority

(UWA) was put in place. UWA has the overall responsibility for all parks, game reserves and wildlife in the country.

The environmental program for the country also includes conducting environmental assessments to generate district-based environmental profiles. A number of environmental policies, laws and regulations governing the management of specific natural resources and protection of the environment have also been enacted. However, their implementation and enforcement has been weak due to inadequate communication of the laws and protocols, inadequately trained personnel, lack of equipment, scarcity of financial resources, administrative and organisational weaknesses and limited environmental information (UNDP 1998). However, strategies and action plans for comprehensive and well-articulated environmental education programmes have now been drawn up by NEMA and are being implemented. Environmental Liaison Units have been created for the purposes of conducting seminars and other forms of sensitisation. Environmental Impact Assessments are being carried out on various ventures, inspections are done on sensitive ecosystems and NGOs are mobilised for environmental activities. With respect to wetlands, a Wetlands Strategic Investment Plan has been prepared for the period 2000/01 – 2004/05. A draft Bill of wetlands is in preparation and wetland activities have been incorporated into the school curriculum (MFPED 2000b).

Inter-sectoral linkages and conflicts have been part of the experiences with environmental management in Uganda. Natural resource sectors have been linking up well with the information and education sectors for the purpose of pursuing sensitisation and education programs relating to sustainable utilisation. Forest, wetland and fisheries are among the beneficiaries of such linkages. Concerning conflicts, however, mention has already been made above of reclamation of forests and wetlands for the purpose of crop production. Concerns for food security, poverty alleviation and generation of foreign exchange, among other goals, have conflicted with sustainability as resource uses have often been stretched beyond the recommended limits. The ministries responsible for agriculture, trade and industry, which have been behind these goals on the one hand, have clearly pursued policies conflicting with those of the ministry responsible for natural resources, the custodians for forests, wetlands,

bio-diversity etc. There is no evidence that within NEMA, or any other organ of Government, there is mechanism for resolving these conflicts. In the case of fisheries, the policy of rapid urbanisation, industrialisation and commercial agriculture have all constituted threats of pollution and damage to the resource base. Even within the fisheries, the interests of business and the market have conflicted with sustainability. To illustrate the point, the latest frame survey reveals that on the Ugandan portion of Lake Victoria, there were 123,988 fishermen, 15,544 fishing boats and 648,687 gill nets (LVEMP 2001). These are believed to constitute too much effort in relation to the fish stocks, set up to pursue livelihood and profit objectives at the risk of overfishing the resource. Furthermore, preferences for juvenile *L. niloticus* among the low-income consumers on the domestic market and, to some extent, among overseas consumers for fillets from small *L. niloticus* of 1kg and less, have resulted in significant harvesting of immature fish. Environmental conflicts take place at at least two levels, the policy level and the grassroot level. At the policy level, it will be required to highlight these conflicts and create mechanisms for co-ordination between the relevant policies. The process, however, needs to be carried down to the grassroot level to the direct users of the resource, where there is need for change in behaviour. The local community is instrumental to achieving this. The link between individual and community self interest and national natural resource management programs require that apart from the Line Ministries, local people comprehend and participate in the programs. NEMA has been trying to achieve this through networking with NGOs and local community institutions. For the time-being, however, natural resource conflict management in Uganda is likely to be hindered by institutional and human resource constraints.

2.5 The National Economy and Poverty Alleviation

Uganda's level of economy is reflected by the GDP at factor cost at constant 1991 prices of about US\$ 2 billion for 1999/00 (UBOS 2000b). Over the period 1995/96 to 1999/00 financial years, the economy grew at an average of 6% per annum, with the highest growth rate of 7.8% in 1995/96 and a drop to 5.1% in 1999/00, attributed to severe drought in parts of Uganda which affected

agricultural production. The sectors with highest contribution in 1999/00 were agriculture (42%), commerce (15%), community services (12%) and manufacturing (10%). Sectors with the highest growth rates in 1999/00 included electricity and water (11.1%), manufacturing (8.6%) and construction (8.5%). Meanwhile inflation rate has been at 7.1% in the same year. Domestic exports for the year 1999 were valued at US\$ 478,750 a decline from the 1998 figure of US\$536,752 of which coffee contributed 60.1%, gold and gold compounds 7.0%, fish and fish products 5.2%, tea 4.5% and cotton 3.6%. Some of the main problems facing the Uganda's economy include unsettled weather patterns for the rain-fed agriculture, deteriorating terms of trade for the mainly primary exports and high debt servicing rates, which rose from 16.2% in 1998/99 to 20.4% in 1999/00.

Uganda's recent economic policies date back to the initiation of the Economic Recovery Programme of 1987, at which the Government began the process of introducing trade and structural reform policies to bring about economic recovery. Policies of investment promotion, liberalisation of input and output markets and trade in general, privatization of state and semi-public companies and banks and rationalisation of tax regimes were introduced. The objective was to increase efficiency of resource allocation while reducing the direct role of Government in production and commercial activities. The reforms would also promote the private sector as the main engine of growth.

The Investment promotion policies were aimed at encouraging private foreign investment through tariff and tax incentives, profit repatriation and protection against expropriation of assets. The policies which began in 1991 involved, among others: a) formulation of the Investment Code to simplify the regulations governing investment in the different sectors; b) establishment of Uganda Investment Authority (UIA) in 1991 as a one stop centre for investment, establishing procedures aimed at minimising bureaucratic delays; c) deregulation; d) provision by Government of fiscal incentives and the necessary legal, policy, and physical infrastructure for private investment to flourish; and e) measures to restore confidence among foreign investors, including return of Expropriated Properties under the Departed Asians Custodian Board. The investment policies are said to have stimulated the growth of investments in the country, increasing supply of

goods and services at competitive prices on the domestic market, creating jobs and incomes and public revenue for development.

Trade liberalisation policies were considered key under the Structural Adjustment Program in creating a conducive environment for private sector competitiveness and investment. The main features included: a) easing of customs import and export procedures; b) removal or minimising of export taxes by replacing export licensing with export certification; c) replacing of import quantities controls with tariff-based controls and seeking common market arrangements such as EAC, COMESA, OAU, ACP, WTO, etc.; d) removal of state trading monopolies; e) liberalization of the foreign exchange allocation and legalization of the forex bureaux; f) introduction of the 100% export retention scheme on non-traditional exports. In pursuing the different aspects of the trade liberalisation policies, however, there is need to understand the linkage between trade and the environment. Changing trade regimes affect the environment and stricter environmental regulations can in turn affect trade. Because of this, some international environmental regulations have been put in place by way of treaties, to which Uganda is a signatory. They include the Convention on International Trade in Endangered Species (CITES), the Montreal Protocol on the Phase Out of Ozone Depleting Substances and the convention on the Trans-boundary Movement of Hazardous Wastes (NEMA 1996). Having said this, however, positive effects of trade liberalisation are reported to have been realised in Uganda, with expanded markets for domestic products, including fish and increased foreign exchange earnings; higher incomes to producers and increased supply of good quality inputs on the market. In the case of fisheries, however, there has also been the potential danger of undesirable exotic fish species finding their way into the waters of Uganda due to the difficulties of monitoring all such trade (NEMA 1996). This might be through investment in farming of exotic fish species or import of live fish for ornamental purposes.

Privatisation refers to the transfer of ownership of business enterprises from Government to private hands. This has been done in recognition of the limited capability of Government to effectively do business. Government's role has been confined to enforcing market rules, collecting taxes and providing an enabling environment for business. This would also free public resources for

infrastructure and service provision undertakings. The Public Enterprise Reform and Divestiture (PERD) Programme was launched by Government in 1992. Under the policy, marketing of agricultural produce was liberalised and monopolies of parastatal marketing bodies eliminated. The result has been higher prices and prompt payments to producers in the agricultural sector. With respect to fisheries sector, there had never been a strong state participation in fish production or distribution, so the impact of the privatisation policy was not equally felt as in the crop sector.

Despite the enactment of strong policies in the 1990s, Uganda has continued to be ranked among the world's poorest 20 countries. Mention has already been made of the political instability of the 1970s and 1980s that contributed to this situation. Other elements of weak governance still continue to constrain development, including corruption, lack of accountability and transparency, poor delivery of services and weak local leadership (MAAIF 2000 p. v). The result is that mass poverty still remains the major challenge facing the people and Government. Appleton (1998) reported: "...56% of Ugandans were poor in 1992, falling to 46% in 1996. The fall is due to growth, not redistribution, with cash crop agriculture, manufacturing and distribution sectors benefiting most. ... The poorest fifth have experienced falling living standards..." (Appleton 1998 p.1).

This has shown that the links between economic reform and growth on the one hand and the meeting of basic needs and eradication of poverty on the other have not been automatic. Many of the households have not benefited because they are outside the targeted sectors. Many others have not been able to take advantage of the market opportunities because of ill health, inadequate access to productive assets or infrastructure. In either case they have, indeed, continued to grow poorer. Basic services have remained inaccessible, because the state is unable to provide local services on a scale commensurate with need. They have remained unaffordable because much of the cost of service provision is met by households in the form of private expenditure, rather than the Government. The debt burden, continued insecurity in parts of the country and the need to rapidly rehabilitate the war-ravaged economy compelled the Government to maintain social spending at "abysmally low levels" (UNDP 1996). Households have for a long time been directly financing around half of the costs for primary health and part

of primary education, filling the financial gaps left by inadequate state spending (OXFAM 1996). The rural areas have experienced the highest incidence of poverty and the lowest levels of human development.

The main economic policy currently pursued by Government is eradication of poverty. In 1997, the Poverty Eradication Action Plan (PEAP) was formulated as the framework for implementing this policy. The strengths of PEAP include its multi-sectoral approach, designed to address the multi-dimensional nature of poverty. Its provisions to operate at different levels, namely at the centre and at the districts, would ensure that poverty at different levels was attacked from the appropriate levels. It would also ensure continuation of macro-economic stability, particularly low inflation rates and stable exchange rates and broad-based economic growth strategy that had been in operation since the early 1990s. PEAP aims at achieving three objectives. First, increasing incomes of the poor by supporting the modernisation of agriculture to improve food security and productivity, improving land laws, providing an adequate road network, improving rural market infrastructure, strengthening rural financial services, enhancing productivity of labour force, promotion of micro-and small scale enterprises; improving telecommunications and rural electrification. Secondly, improving the quality of life of the poor by improving access to health care, education and clean water, as well as effective management of natural resources. Thirdly, strengthening governance through mechanisms to improve security and accountability and transparency, decentralisation, enhanced flow of information, and democratic principles of consultation and popular participation. Funding for PEAP, which had hitherto been through the normal Government budgetary processes, was enhanced with the creation of the Poverty Action Fund (PAF) in 1998, into which additional resources made available from the multilateral debt relief initiative for the Highly Indebted Poor Countries (HIPC) were channeled, for poverty alleviation. This enabled the Government to double the resources available to programmes within PEAP by the year 2000/01. Provisions have been made for different mechanisms for monitoring of PEAP, namely through the establishment of the Poverty Monitoring Unit in MFPEd, charged with responsibility to produce the Poverty Status Reports in 1999 and 2001; the Household Consumption Monitoring Surveys carried out by the Uganda Bureau

of Statistics periodically and the Uganda Participatory Poverty Appraisal Process (UPPAP) exercises scheduled for 1998 and 2000, aimed at bringing the voices of the poor into the planning for poverty eradication. These arrangements would ensure comprehensive and balanced monitoring. PEAP has since been revised in 2000, based on the experiences so far and it now places greater emphasis on promotion of development of the private sector to contribute indirectly to poverty eradication. This would entail, among others, reforms by Government in provision of infrastructure, particularly utilities to make them affordable and dependable, strengthening the financial sector through improving access to credit and improvement in tax administration, among others. Despite the elaborate provisions made under PEAP, however, mechanisms for inter-sectoral and between-level co-ordination of the activities under the plan remain unclear.

Because of the special position of agriculture in eradication of poverty, a separate framework has been developed for the purpose of refining the plans contained within PEAP on modernisation of agriculture. This is the Plan for the Modernisation of Agriculture (PMA). Like PEAP, PMA is a holistic strategic framework, multi-sectoral and multi-level in the hierarchy of Government. Uganda has three categories of farmers, namely the subsistence, semi-commercial and the commercial. The subsistence farmers produce predominantly for household consumption, with some surplus for the market, they are the majority and are the poorest. It is the policy of Government to target the subsistence farmers in order to transform agriculture. The mission of PMA is, therefore “eradicating poverty by transforming subsistence agriculture to commercial agriculture” (MAAIF 2000 p.vii). Constraints within the subsistence agriculture relate to productivity and governance. Productivity related constraints include among others lack of food, inadequate land, poor soil fertility, inadequate and distant water resources, lack of inputs including fertilisers, pesticides, seed and tools, inappropriate technologies, lack of financial services and market. Good governance constraints include insecurity of persons and property in parts of the country, corruption, lack of accountability and transparency, poor delivery of basic services, weak leadership and lack of farmer consultation. Like in PEAP, PMA has proposals to address these constraints. Areas of public interventions under PMA include research and technology development, agricultural advisory

services, rural finance, agro-processing and marketing, agricultural education, sustainable natural resource management and supportive physical infrastructure. However, one criticism of PMA is that it fails to take recognition of the diversity in production system within the agriculture sector and has tended to be crop-centred. Details of the proposals within the areas of public interventions need to take account of the different requirements of crop, livestock and fisheries sub-sectors of agriculture.

2.6 The Fisheries Sector

Uganda's water resource endowments have already been reported in paragraph 2.1 above. These water systems support significant fisheries. The present fisheries resource base is comprised of artisanal capture fisheries and aquaculture. The major commercial species for the fisheries include *Lates niloticus*, *Oreochromis niloticus*, *Rastrineobola argentea*, *Alestes baremose*, *Hydrocynus spp.*, *Clarias mossambicus*, *Bagrus docmac* and *Protopterus*. The potential production is estimated at 300,000 tonnes annually on sustainable basis but actual catch is about 220,000 per year. An estimated 136,000 fishermen operate on the lakes, with some 500,000 others involved in fish processing, fish trade, boat construction and other related activities. These figures relate to Ugandan segment of Lake Victoria and all the other water bodies in Uganda (MAAIF 2000). Over the last decade, the importance of the fisheries to Uganda has clearly come to light in the large *L. niloticus* catches landed, exchanged at sometimes quite high prices to generate incomes to the fishers concerned and filleted for the export market. Fish export data are presented in Table 2.5

Table 2.5: Export of Fish and Fish Products, 1993-1999:

Year	1993	1994	1995	1996	1997	1998	1999
Quantity (Tonnes)	6,138	6,564	16,046	14,075	11,819	14,688	9,628
Value (US\$)	8,943	10,403	32,262	46,251	27,864	39,879	24,837

Source: UBOS 2000b

Table 2.5 shows the quantities of fish exported and the foreign exchange earnings generated between 1993 and 1999, making fisheries Uganda's second export earner to coffee in 1996. In addition to this significant economic performance, however, Uganda's fisheries would be important because of its potential to make direct contribution towards realisation of the country's policy of poverty alleviation. First, its high quality animal protein output is a contribution to the good health of local communities, at an affordable cost. This benefit is enhanced by the wide diversity of species that would be available to suit the budget and preferences of different consumers. Reference is often made of the dried small pelagic known as *R. argentea*, which is one of the most widespread fish commodities from Lake Victoria, significant quantities of which find their way westward and northwards to markets in the DRC and the Sudan. Dried *R. argentea* has a comparatively long shelf life for wider distribution even to remote areas with minimum infrastructure where the poor live. It can also be easily divided into small portions at point of sale, meaning that it can be had at prices affordable for many who otherwise could not afford fish, which makes *R. argentea* truly a food for low-income households (FAO 1999). Secondly the magnitude and distribution of the fisheries resources provide significant opportunities for livelihood activities, within technological reach of the local people. Fish is said to have market, both locally, regionally and overseas, so fishers of different levels have a chance of tapping into the different markets of their reach. Within the fisheries itself, there is such diversity of activities and roles, offering large employment opportunities. Fishery-related employment opportunities exist within the harvest sector as crew, boat and gear owners and within the secondary or tertiary activities relating to processing, trading and the provision of inputs and miscellaneous support services. Some reports have given the estimate of some 500,000 Ugandans as being involved in fishery employment (FAO 1999).

However, a few concerns have begun to be raised which would affect the potential within the fisheries for poverty alleviation. First, since the early 1990s, *R. argentea* has increasingly been utilised for the production of animal feed. This trend is leading to increased prices for local consumers, a development which

may deny low-income households access to the product that is their important food. Secondly, for some years now the demand for *L. niloticus* by processing companies has driven up beach prices and diverted fish supply away from domestic consumers. As a result there has been growing catching and trading of immature fish for the domestic markets, a development that threatens the resource base. Thirdly, the rise in beach prices of fish has also reduced local population to consumers of the *L. niloticus* 'frames' consisting of fish heads and skeletons, which are the industrial processing by-products left over from filleting operations, that are often fried or smoked for local re-sale. This product is said to be low quality, as much of the food content is extracted during the filleting and the handling by factories is poor. Lastly, poorer, less well-equipped operators have been slowly marginalized and displaced from the fishery, a tendency that eliminates the poor from benefiting from the fisheries.

Fisheries are part of the broad agriculture sector in Uganda and fall under the institutional framework responsible for the sector. The implication of this structure is that the fisheries often come under different policies and planning framework applied within the overall agriculture sector from time to time, the full relevance and impact of which may not be immediately clear for the fisheries. In the 1980s MAAIF ran a production promotion campaign for farmers called the "double production" campaign. When it came to fisheries, it was not clear if that would be the right thing to do in view of the sustainability consideration. Another case is within the PMA, where little attempt has been made to define the major provisions with respect to fisheries. Despite the launching of PMA in 2000, therefore, concerns have continued to be expressed that the fisheries were operating without an explicit national policy. Measures are now in progress to put in place the National Fisheries Policy to ensure that the fisheries resources are regulated and consumers assured of quality and safety of fish and fishery products (MAAIF 2000).

MAAIF (2000) presents the key elements of the proposed policy to include: a) promote capture fisheries management in a sustainable manner involving participation of stakeholders at all levels; b) control overfishing by limiting the total number of fishers and quantity of gears allowable; c) identify and implement sustainable funding mechanisms for improved fisheries management;

d) increase aquaculture fish production to reduce the gap between fish supply and demand; e) ensure safety, quality and wholesomeness of fish and fishery products before placement in both domestic and foreign markets; f) encourage a wide range of pre-packed value added fishery products for more competitive marketing; g) institute a deliberate effort directed towards attracting investments in the fisheries industry where such ventures are profitable and where government is not in a position to finance from public resources; h) develop adequate and skilled manpower in the technical and managerial disciplines in both public and private fisheries sector; i) scientifically investigate issues pertinent to fisheries and develop appropriate technologies. Concern has, however, been raised about the co-ordination in the implementation of the fisheries policy, particularly between the 52 semi-autonomous districts operating under decentralisation and the centre, represented by the Department for Fisheries Resources. The policy proposes "...fisheries management should be centralised to ensure harmonisation of district and national related management programs that allows for sustainable resource use. A Uganda Fisheries Authority (UFA) is, therefore, proposed. The proposed Authority shall use the autonomy to effectively manage and conserve the sector resources." (MAAIF 2000 p. 20). It is not stated clearly how this provision will not work against the spirit of decentralisation and participation of the local communities in fisheries resource management.

2.5 Conclusion

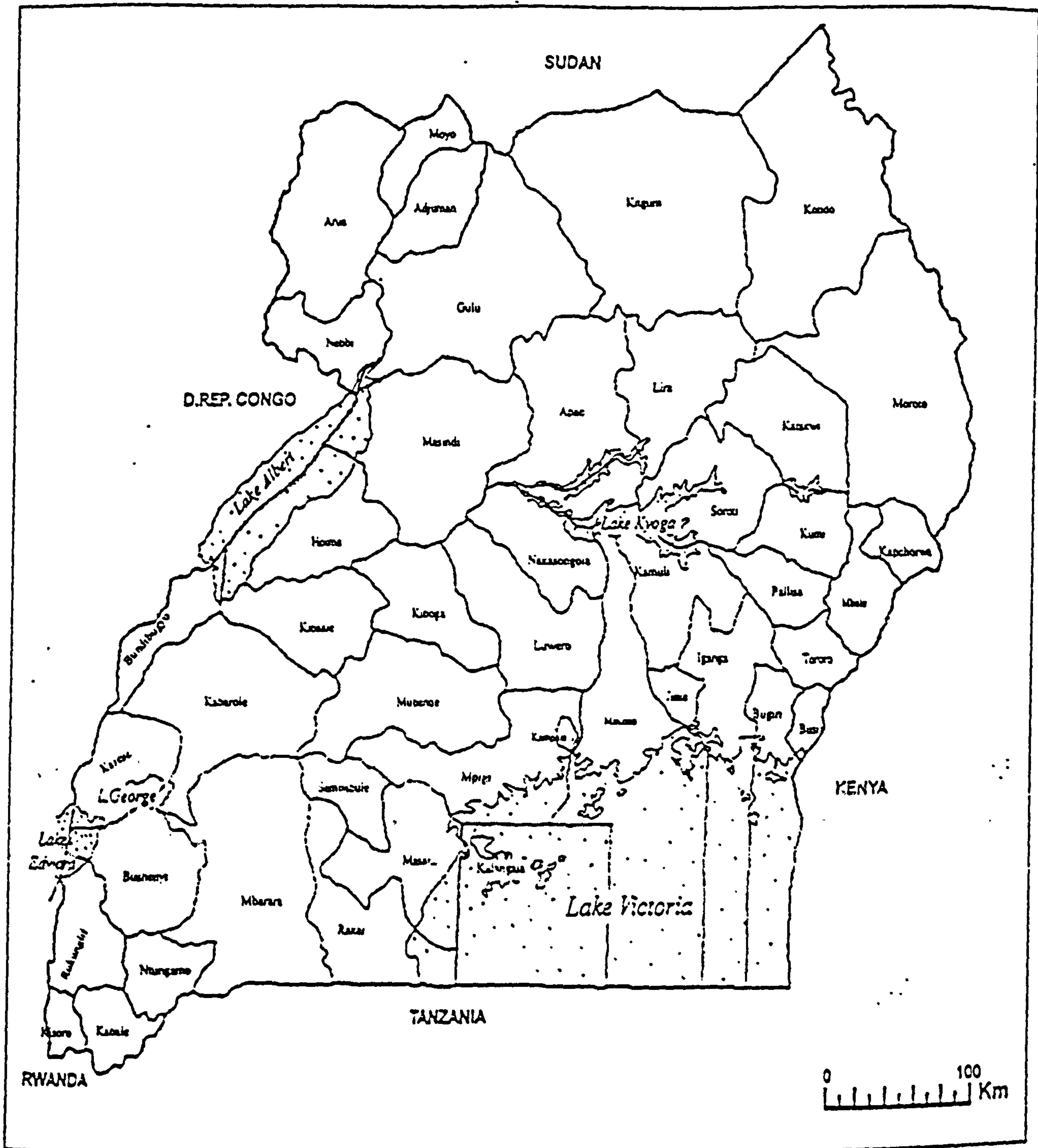
The chapter examined the key aspects of Uganda's society, environment and economy with the view to providing the background information to the study of poverty in the fisheries. As a conclusion, the strengths and weaknesses that emerged at various points of the analysis are drawn and summarised as the message from this chapter. Uganda's landlocked position is a disadvantage with respect to external trade on which the country depends for its development needs. High transport costs to the sea lead to high cost of import of consumption goods as well as production inputs, with significant consequences for the poor. There is a perception that Uganda is well endowed with valuable natural resources including arable land, good climate, vegetation and water resources, among

others. However, these natural resources favour the production typically low-valued primary products, or those with highly unstable world market prices. They include coffee, cotton, tea, maize, beans and fish. This has negative effect on growth and is a source of risk to the livelihood for the poor. The country's population is its biggest asset for development. However, its growth rate average of 2.5% per annum is said to be too high for the available social facilities and the resources for their expansion. The productivity of the population is limited by its low health status, attributed to high incidences of malaria, respiratory infections and HIV/AIDS, among a variety of other ailments. Limited medical and public health facilities and services were reported. Consequently, there is also a direct cost of poor health, since some of the medical services have to be paid for. The human capital of the population is limited by the low levels of education achieved. Limited access, high cost and irrelevant content of education have contributed to its low value. Bad politics and poor governance characterised much of the Uganda's independence history. This did not only create poverty by discouraging investments into the country and by failing to provide the necessary social services but created a sense of insecurity and a state of risk among the people, all of which are dimensions of poverty. Insufficient and poor use of resources that become available together with technological limitations continue to drive the economy down the poverty end. Despite the heavy dependence of the economy on natural resources, unsustainable practices characterise their exploitation, with greater tendencies towards poverty for the nation as a whole. In the case of the fisheries, failure to manage the resource presents a threat to its vibrant industry. The roots of Uganda's poverty are, therefore, wide spread, ranging from its natural resources, the people, the Government, the resource and technology available.

Uganda's strengths are said to lie in the policies it has adopted. The environmental policies under NEAP would provide for resource sustainability in the process of development. Its success, however, will depend on a number of factors, including political will at all levels. The decentralisation policy and other social, political and legislative measures have been introduced to strengthen governance and provide the 'enabling environment' required for development. Various economic policies are in place, proposing the relevant

programs of action and providing for their institutional, resource and technological requirements. The most important economic policies at this stage are PEAP, PMA and NFP. Their success would reduce Uganda's poverty to some extent. A related strength is the goodwill Uganda enjoys among donors, which has not only led to continuous inflow of funds for over a decade now but has recently led to the inclusion of Uganda among the countries to benefit from the Heavily Indebted Poor Countries (HIPC) debt relief initiative. Uganda's main donors include the World Bank, IDA, EU, DFID, USAID, ADB, DANIDA, JICA, KfW, SIDA, IDRC and NORAD, among others. However, effective utilisation of donor facilities still remains a challenge for the leadership of Uganda and despite the large inflow of resources, poverty has persisted.

Map 2.1: Administrative Map of Uganda:



Source: UBOS 2000b

CHAPTER THREE

LITERATURE REVIEW

According to the University of Queensland, a literature review “summarises, interprets and evaluates existing ‘literature’, or published material, in order to establish current knowledge of a subject. The purpose for doing so relates to ongoing research to develop that knowledge. The literature research may resolve a controversy, establish the need for additional research, and/or define a topic of inquiry” (University of Queensland website:

<http://www.ems.uq.edu.au/phdweb/phfaq23.html>).

3.1 Introduction

This chapter presents a report of the literature review that was carried out as part of the activities under the research, mainly at the preparation stage but also as a continuous exercise through all the thesis stages. The aim was to establish the knowledge base on the subject of poverty and draw lessons for research and development of the fisheries of Lake Victoria. It was also to confirm what the most important issues within poverty alleviation and sustainable development were and their relevance to the area of research. In the process, any controversies in the theories or policies would be identified, as well as the gaps. The review would also give indications of the global direction poverty alleviation and sustainable development was taking to enable the initiatives on Lake Victoria to fall in line with it. The literature review would aid in positioning the research within the right context. It would further assist in establishing the theoretical framework and methodological focus of the research.

The choice of literature has been based on their relevance to poverty alleviation and sustainable development within the context of fisheries and related natural resource sectors in the developing world. Publications on the issues at the different levels were considered, namely the global, regional, national and local. The focus was on concepts, policies and methodologies. The time frame was broad, allowing for effects of policies over a long time-span to be reviewed.

The chapter begins with a review of the development strategies in the post Second World War period, examining their effects on poverty in the developing world and the global and regional patterns of wealth distribution. The concept of sustainable development is then introduced with a view to establishing how it could be applied to the fisheries of Lake Victoria. A selection of models relevant for its implementation are reviewed and assessed for their appropriateness to the Ugandan situation. This is followed by a study of the indicators, causes and measurement of poverty, aimed at evaluating the interventions proposed by the Government of Uganda under the Poverty Eradication Action Plan, with specific reference to the fisheries. The outputs of the chapter will be improved conceptualisation of poverty, better methodologies for poverty analysis and recommendations for improved poverty alleviation policies and strategies.

In the conclusion, therefore, the major contributions from the literature to the body of knowledge under review are summarised. An evaluation of the global status of poverty alleviation strategies is given, identifying their limitations, contradictions and relevance to Lake Victoria. Existing knowledge gaps related to poverty alleviation on Lake Victoria are outlined as a basis for justifying the research. Findings from the literature review will be carried forward and reflected in subsequent analysis and discussions on the thesis.

3.2 Goals of World Development

It is often regarded that the level of poverty in a country would be closely related to its rate of growth and level of economic development. As countries become richer, on average the incidence of poverty should fall and other indicators of well-being, such as average levels of education and health, would tend to improve. This situation seems to have been born out during the 20th century by the experiences in Europe, China and East Asia, where different rates of growth success brought with them similar falls in proportion of the population living in poverty (World Bank 2001c). However, this has not always been the case and economic growth and poverty decline should not be seen as simple relationships which always work. Behind much of the economic growth experienced in the recent past has been the development theory, also known as development

economics. Sen (1986) gives a discussion of the development theory, explaining that it was a sub-discipline which evolved only recently from the mainstream traditional economics in response to the special development needs of the new nation-states emerging in the post World War II period. These nations were faced with massive rural unemployment and had remained behind in the process of industrialisation. Although there could have been variations in emphasis from one situation to another, the main policy themes of development theory were to promote technological development and industrialisation, rapid capital accumulation, mobilisation of underdeveloped manpower and the role of planning and an economically active state (Sen 1986 p. 37). These policies would stimulate growth, which would lead to wealth accumulation for the nation-states, thus bridging the gap with the developed nations. The World Bank (1990) reports that the assumption was that once there was growth, poverty would be automatically taken care of, through a process of 'trickle down' from the rich to the poor within the states. However, the report notes that although there were some cases in Europe, China and East Asia where economic growth led to fall in proportion of the population living in poverty, there were also clear cases of new unemployment, inequalities and growing poverty in many parts of the world during the era of development economics. Criticisms of development theory have ranged from its objective to the assumptions. Sen (1986) argues that economic growth should perhaps be viewed as a goal in itself and not necessarily a means to economic development. Its focus is on the national product, aggregate income and total supply of goods rather than on the people's capabilities for achieving high quality of life, which would be the concern of economic development. Referring specifically to life expectancy and level of health, one author says, "Not merely is it the case that economic growth is a means rather than an end, it is also the case that for some important ends, it is not a very efficient means" (Sen 1986 p. 47). Wee and Heyzeer (1995) express doubt on the assumption that the generated wealth would 'trickle down,' as there is no guarantee that the wealth would even stay in the country in the first place. They argue that the world has now become known as a "global village" where the multi-national investors are able to transfer large sums of money every day with the help of the global financial markets. Furthermore, since man has no limits to his desire for wealth, the rich members of a society would not allow any of their

wealth to 'trickle down' to the poor, whatever level of wealth accumulation is achieved within a society. They are also critical of the implication in the development theory that wealth generation and poverty are separate and unrelated processes. This is not always the case as poverty is often caused as a result of loss of livelihood resources in processes designed to generate wealth for the rich. The theory also assumes that there are no institutional barriers to the trickling down of wealth, once it has been generated, which is not always the case. Developing countries exhibit situations of ethnic, religious, class and gender differences, which constitute effective barriers to the flow of wealth within the nation (Wee and Heyzeer 1995 p. 50).

Soedjatmoko (1986) explains the failure of the development theory in its lack of recognition for the human dimension of development. He argues: "The success and failures of thirty years of development experience have shown us that the organised pursuit of material improvements does not automatically bring freedom, human dignity, justice and civility in its wake. In fact, these values have often fallen victim to the development endeavour, even when the provision of basic services includes access to education and legal protection" (Soedjatmoko 1986 p. 33).

Pieterse (2001) admits that development theory was in crisis, as globalisation and regionalisation were overtaking the standard unit of development theory, the nation. Furthermore, the conventional unit of development, the state, was being overtaken by the role of international institutions and market forces. Many of the ideals of development theory were being questioned as a result of environmental concerns, desires for cultural identities and adverse effects of policies. However, he argues that the solution to the crises was not to abandon the development theory in favour other strategies but to find ways of strengthening it. "From its beginnings in the nineteenth century, development thinking was a reaction to the crises of progress, such as the social problems caused by industrialisation. Hence questioning, rethinking and crisis are part of development and not external to it. Development then is a field in flux, with rapid change and turnover of alternatives. Precisely because of its crisis character and predicament, development is a high energy field" (Pieterse 2001 p.1). The text attempts to reconstruct the development theory, including extending the human development

approach in it. Limitations within the early development economics to deliver on poverty alleviation and create capabilities for high quality of life meant that as a development strategy it had to be improved, supplemented or even replaced. Developments in economic strategies are reviewed in greater detail in paragraph 3.6 below.

3.3 Wealth Distribution

The literature was reviewed for the global distribution of wealth and what lessons could be learnt from it for the fisheries of Lake Victoria. Townsend (1993) attributes the disparities in global wealth to the actions of the rich countries. He argues: “since the rich countries possess the greatest influence over the world’s economy and, through their connections with international organisations and multinational companies, over the global distribution of resources, they hold the key to the changes taking place in the distribution of incomes within as well as between countries and the percentage of each population found to be in poverty” (Townsend 1993 p. 13). In a similar tone, Bartelmus (1994) attributes the problem of global inequality to the excessive demands and unsustainable lifestyles among the richer segments. He argues that global equity might only be achieved through radical changes in production and consumption patterns that have developed in industrial countries and are being emulated in much of the rest of the world. He expresses doubts as to whether market incentives and corresponding price signals can achieve this correction alone. He, therefore, advocates “strong international commitment with additional regulatory action” to address the problem (Bartelmus 1994 p.143).

The World Bank (2001c) gives a report on global income distribution by the end of the 1990s, noting that it was extraordinarily unequal. According to the report, the average income in the richest 20 countries was 37 times the average in the poorest 20, with the gap growing. The world’s population (based on 1998 estimates) was 6 billion, of whom 2.8 billion, or close to half, lived on less than \$2 per day, while a fifth lives on less than \$1 a day. The report says some 44% of the world’s poor were to be found in the South Asia region. Although it was the fastest growing developing region in 1999 with a GDP growth averaging 5.4

percent, South Asia had been affected by regional and national political instability, notably the tensions between Pakistan and India over Kashmir with the sanctions imposed on them following their nuclear weapon tests in 1998; a military coup in Pakistan in October 1999; a sharp escalation in the scale of the Sri Lankan civil conflict; political strikes in Bangladesh and the instability in Nepal. Combined with economic and policy constraints, these upheavals limited the region's ability to attract the foreign investment critical to growth and poverty reduction. The instabilities had also contributed to large public sector deficits, inadequate infrastructure services and low levels of public spending. The region had the world's highest adult illiteracy rate, with 59 percent of women unable to read or write. It accounted for a third of the world's maternal deaths and malnutrition that affects more than half the region's children under 5 years of age. Lack of access to health care; major public health threats such as HIV/AIDS and malnutrition; low primary school enrolment rates; environmental degradation; inadequate infrastructure and social exclusion were among the many obstacles to future growth and poverty reduction.

The World Bank (2001c) reports that the East Asia and Pacific region had been responsible for another 23.2% of the world's poor people. However, between 1987 and 1998, the region had the most remarkable progress, reducing its percentage of people living on less than \$1 per day from 26.6% in 1987 to 15.3% in 1998 (World Bank 2001c p. 23). This is attributed to continued growth and recovery from the 1997-98 financial crises, strengthened by increases in demand for the region's exports and improvement in the region's terms of trade, which resulted in creation of new jobs. Latin America and the Caribbean; Europe and Central Asia and Middle East and North Africa were responsible for the remaining world population of the poor.

3.4 The Sub-Saharan African Context

Iliffe (1987) gives an account of the recent poverty in Africa in the following words: "The bad news was that after relative progress in the 1960s, Africa suffered economic crisis in the 1970s and poverty increased. The incapacitated, the aged, unsupported women and the young were still the bulk of the structural

poor. They were supplemented by the new poor of the twentieth century – inhabitants of neglected regions, the unemployed and especially the ill-paid and by the growing numbers who, although able-bodied, were barred from resources by the competition of a growing population or by a more ruthless use of power and wealth. The good news was of two types. On the one hand, the crisis of the 1970s and 1980s showed that the poor had lost little of their resilience and capacity for survival. On the other hand, awareness of African poverty grew rapidly at the time. It was realised at least that the poor were mainly rural. It was realised also that the earlier public policies had contributed to poverty. This awareness opened the possibility of action, but on the whole, in the mid 1980s, the bad news till outweighed the good news” (Iliffe 1987 p. 230).

The World Bank (2001c) report indicates that some 24.3% of the world’s poor live in the sub-Saharan Africa, the region where the highest proportion of the population (46.3% for 1998) is below the poverty line of one dollar per day. It also holds the second largest proportion of the world’s poor (24.3%) after South Asia (43.5%) according to 1998 figures provided by the report. With just modest increases in per capita income, the main problem of the region was growth that fell short of what was needed for the absolute number of poor to decline. According to the same report, the poor performance was attributed to the slow growth in the region in the 1990s. The continent made some significant advances over the last decade but needed to continue with strengthening democratic and more open systems of governance, establishing peace and strengthening the rule of law, a precondition for investment and growth. The countries in the region were also advised to continue pursuing reforms that would equip them for global economic integration, namely restoring macroeconomic balance, improving resource allocation and creating conditions more promising for efficient investment. Progress achieved so far included opening up of markets, realigning of currencies, reducing tariffs and abolishing price controls. The export sector had been revitalised and was growing at around 8 percent per annum. There were on-going efforts at regional integration, which would provide a boost to intra-African trade and to export expansion. These included establishing sub-regional institutions such as the Southern Africa Development Community (SADEC), the Economic and Monetary Union of West Africa

(UEMOA) and the East African Co-operation (EAC), to facilitate cross-border trade and investment initiatives. New financial institutions and regional stock exchanges were also being established. Other issues of concern to the region include greater investments in infrastructure, protecting the environment and greater efforts to fight HIV/AIDS, as the spread of the disease had continued unabated in most of the countries, threatening development in the region as a whole.

Within some of the individual countries, in Nigeria, the number of people in extreme poverty rose, following the reversal of the 1985–92 reforms, reaching an estimated 70 million, or 66% of the population, based on a nationally defined poverty line (rather than the international, a-dollar-a-day poverty line). The country accounted for nearly a fourth of Sub-Saharan Africa's poor. Urban poverty had grown faster than rural poverty, due to massive rural – urban migration, with the incidence of urban poverty matching that of rural poverty. In Ethiopia, which is Sub-Saharan Africa's second most populous country and one of the poorest, however, the rural poverty rate fell. The reforms after the end of the civil war in the early 1990s spurred a strong recovery, ending a two-decade slump. The benefits of agricultural price liberalisation spread quickly, boosting growth of rural incomes. Urban poverty, on the other hand, was stagnant. However, progress was expected to be slowed down by the border conflict with Eritrea. Countries which maintained civil order, political openness and sound economic management saw improved economic performance and better outcomes for the poor (Côte d'Ivoire, Ghana, Mauritania and Tanzania). Uganda was also included in this category of countries by the World Bank report, despite disturbances in the north and west of the country, which had disrupted economic activities and social life for several years. Countries that experienced breakdown of order in the state and institutions and suffered the effects on poverty included Burundi, Rwanda, Sierra Leone, Somalia and Sudan. Countries in the middle group, namely Cameroon, Chad and Kenya were said to require immediate external help so that they could achieve better living standards for their people.

3.5 Poverty and Income Inequality

Related to international wealth disparities is the problem of income inequality within a country. Development economists have argued that greater income equality in developing countries might in fact be a “precondition for self-sustaining growth” (Todaro 1985 p. 160). In the recent times, Wee and Heyzer (1995) associated inequality with the two World Bank development strategies, namely the ‘trickle down’ and the ‘structural adjustment programme’, arguing that these approaches treated human capabilities largely in terms of factors of production, also referred to as ‘human capital’. “With this model, development is merely the means to an economic end, with limited concern for gender and equity” (Wee and Heyzer 1995 p. 57). Ravallion (1997) investigated whether the poor faced the same prospects for escaping poverty in high-inequality developing countries as in low-inequality countries. He sought to establish if inequality could be so great as to stifle prospects of reducing absolute poverty, even when other initial conditions and policies are favourable to growth. His finding was that at any positive rate of growth, the higher the initial inequality, the lower the rate at which income-poverty fell. It was possible for inequality to be sufficiently high to result in rising poverty, despite good underlying growth prospects at low inequality. Deininger and Olinto (2000) examined the robustness of the relationship between inequality and growth, using assets (land) rather than income. They found evidence that asset inequality - but not income inequality - had a relatively large negative impact on growth. They also found that a highly unequal distribution of assets reduced the effectiveness of educational interventions. The implication of their findings was that policy makers should be more concerned about access by the households to assets and to the opportunities associated with them, than about the distribution of income. They concluded that long-term growth might be improved by measures to prevent large jumps in asset inequality, possibly irreversible asset loss because of exogenous shocks and by policies to facilitate asset accumulation by the poor. The World Bank (2001c) supports expansion of poor people’s asset as a strategy to address inequality but suggests that the state would have to play part in this for two reasons: “First, markets do not work well for poor people, Second, public policy can reduce initial inequalities and increase the opportunities for poor people to benefit from

growth” (World Bank 2001c p. 79). Johnston (1992) examines options for income redistribution in fisheries, suggesting that this should be one of the explicit goals of fishery management. He cites a management strategy that restricts fishing effort as a method of changing the proportion of small to large scale fishermen and, thus altering the distribution in favour of small scale fishermen. The use of individual transferable quotas, on the other hand, often encourages accumulation of quotas in the hands of a few wealthy fishermen, thus leading to a highly skewed distribution of income in the fisheries.

3.6 Review of Strategies

The need to address the problems of growth and income disparities call for appropriate strategies to be formulated. Chambers (1983) suggests that developing strategies should begin with the priorities and strategies of the poor themselves. He, however, expresses the difficulty of development experts in trying to know the priorities of the poor, since they are ‘outsiders’. This is due to the fact that the rural poor are “dispersed, isolated, uncommunicative, rarely asked their views, frequently masked by others, selectively perceived, deferential” (Chambers 1983 p. 141). He suggests the use of indirect methods such as long exposure with the poor to get an understanding of what they want.

The World Bank (2001c) reports on the recent strategies recommended to developing countries to address poverty. They are based on the understanding that development goes beyond growth and involves structural transformation, not only in the economy but also in the social and cultural set-up. Historically, growth has depended on investment and much of the developed world grew in the 20 century as a result of investment in productive activities, infrastructure and services. However, due to the changes in economic environment that have taken place, today’s economic growth depends not only on investments but also on policies, institutions and external shocks necessary for it to be sustained. The report outlines some of the policies that are strongly conducive to economic growth. They include openness to international trade; sound monetary and fiscal policies reflected in moderate budget deficits and the absence of high inflation; a well-developed financial system and a moderately sized government (World

Bank 2001c p. 49). The World Bank (1997) places emphasis on institutional factors, including strong rule of law and the absence of corruption, as being important for growth. This is because they provide fair rule-based environment in which firms can invest and grow. Strong institutions would also be necessary for implementation of painful but necessary policies and resolving conflicts, especially in ethnically fragmented countries (World Bank 2001c). Shocks to an economy can be external or domestic. Wars and natural disasters are among them and can drastically lower growth rates. Other shocks with less devastating negative effects may include deteriorating terms of trade and badly managed reforms, which may lead to capital flight. On the other hand, aid is an external intervention measure that could boost growth, if the necessary policies are in place.

In view of the extraordinary inequality in the distribution of global gains and the picture of world poverty described above, the international community set itself a number of goals for the opening years of the 21st century, following discussions at various United Nations conferences. DFID (2000) outlines these goals, referred to as the International Development Goals (IDG), for a better world for all. For economic well being, the goal is reducing the proportion of people in extreme poverty by half between 1990 and 2015. For social development: enrolling all children in primary school by 2015; demonstrating progress towards gender equality and the empowerment of women by eliminating gender disparities in primary and secondary education by 2005; reducing by two-thirds the mortality rates for infants and children under 5 and by three-fourths the mortality rates for mothers between 1990 and 2015; providing access to reproductive health services for all individuals of appropriate age by 2015. For environmental sustainability and regeneration, implementing national strategies for sustainable development by 2005 to ensure that the current loss of environmental resources is reversed globally and nationally by 2015. IDG are expressed in global terms but are to be pursued by country. Achieving them would also require building capacity for effective, democratic and accountable governance, protection of human rights and respect for the rule of law. The World Bank would systematically monitor progress in achieving these goals in the countries it assists (World Bank 2001a p. 23).

3.7 Sustainable Development

Fisheries are fragile resources, regarded as highly prone to resource degradation arising from exploitation. Decline in the stocks of important commercial fish species and disappearance of endangered species are the main threats from human exploitation. Initiatives to address poverty among fishers should, therefore, be planned within the framework of sustainable development (SD). Gradually, SD has achieved the status of the new long-term goal for humanity. It was accepted by the international community at the 1992 Earth Summit in Rio when the agreement was signed by political representatives from all over the world. World Commission on Environment and Development (1987) provides a report on the Brundtland Commission, where the concept of SD was defined as development that met the needs of the present without compromising the ability of future generations to meet their own needs. Otterstad (1997) explains that the concept of SD was a “typical consensus product, formulated in sufficiently vague terms to make international agreement possible, while at the same time precise enough for implementation procedures to be agreed” (Otterstad 1997 p. 165). Several attempts have been made at interpreting SD. The point was that as a nation had a limited natural resource base or its ‘natural capital,’ it needed SD to cater for its present as well as future generations, an ideology referred to as intergenerational equity (Common 1995, Dasgupta 1996, Redclift 1987, Riddell and Robinsons, 1995). SD is also seen as a strategy to maintain the environmental quality and prevent economic welfare from declining over time (Barbier 1994). Lélé (1991) summarises the mainstream SD thinking as consisting of three elements. First, environmental degradation is already a threat to human well-fare and needs to be addressed. Secondly, the basic needs of people should be provided and the productivity of all resources increased. Thirdly, the process of development must be participatory. Bruff and Ward (1995) elaborate four core points in SD, namely the concern for the well-being of future generation; recognition for the health and integrity of the natural environment; quality of life as embedded in the many dimensions of well-being and equity, exhibited in fairness in the distribution of costs and benefits. In the analysis of SD, Gladwin *et al.* (1995) are concerned with the often inadequate

emphasis of socio-economic aspects of SD. They argue that SD was often conceptualised as an eco-efficiency problem, largely involving pollution prevention and resource conservation. They, however, viewed that as the easy challenge of the necessary transformation, while the socio-economic challenge might be the hard one. Sustaining diversity in nature and humanity was likely to prove the most formidable challenge for sustainable development. Redclift (1987) examines the transformation of the environment in the course of development, identifying the global economic system as a major threat to its degradation. He argues that to address the problem, the development process needs to be re-directed to give greater emphasis to indigenous knowledge and experience.

3.8 Meaning of SD for Wealth Generation

The fundamental premise of mainstream SD thinking has been that there was a link between poverty and environmental degradation within the SD process, with one said to be causing the other (Reardon and Vosti 1996). The implication of this is that economic growth and consequently wealth accumulation would require that the problem of environmental degradation be addressed. This can be achieved through measures to ensure that the conditions for ecological sustainability prevail within the resource base upon which the wealth generation is sought. However, the two-way link between poverty and environmental degradation means that the converse would also be necessary, namely that achieving the conditions for ecological sustainability would require that some degree of economic development be attained. To break the cycle often requires external interventions in such areas as attending to basics of the poor or building management capability among the resource users.

However, Lélé (1991) holds a depressing but realistic view of SD, raising concern about the simple two-way link between poverty and environmental degradation. She observes "...even a cursory examination of the vast amount of research that has been done on the links between social and environmental phenomena suggests that both poverty and environmental degradation have deep and complex causes." In her model, given in Figure 4.2 below, she introduces

access to resources, affluence, culture and values and technology as additional factors re-enforcing the “two-way” causal interaction between poverty and environmental degradation. The model is an attempt to provide the big picture within which poverty and environmental degradation are caused. The author refers to it as “a more realistic representation of the poverty-environmental degradation problem” (Lélé 1991 p. 614). It is essentially a feedback model where access to resources has consequences for poverty, affluence and environmental degradation. Affluence relates to consumption in the North, but also could be within the developing countries themselves. The model is concerned that current policy making towards poverty and environmental degradation focuses on designing for efficiency, proper resource pricing, managing common resources, attending to basics and building management capabilities. “Deeper socio-political changes (such as land reform) or changes in cultural values (such as over-consumption in the North) are either ignored or paid lip-service” (Lélé 1991 p. 613). In the Lake Victoria fisheries Uganda situation, the model would be applicable to an extent. The export of *L. niloticus* fillets to the European Union countries, associated with the affluence among consumers in Europe and, to some extent, the industrial processors and agents in Uganda, has driven fish prices beyond the reach of local consumers, reducing them to consumers of low quality fish “frames”. Similarly, the increasing utilisation of *R. argentea*, the small pelagic described in Chapter One, in the production of animal feed and the associated rising prices for local consumers has increasingly denied low-income households access to the product which is their important food. The development of the *L. niloticus* export industry has also marginalised a large number of dealers who can no longer have access to fish supplies for their trade. It has also threatened the whole sustainability of the fisheries as there is increased catching and trading of immature fish on the domestic markets. The relevance of Lélé’s model to Lake Victoria continues to be seen in the technological aspects. Inappropriate gears which have been banned by the authorities, namely beach seines, cast nets and traps have continued to be widely used. Under-sized mesh gear, below the 5-inch mesh recommended, as well as destructive fishing methods involving beating of water to drive all fish into the nets, a method popularly known as “tycoon,” are used. In the most glaring situation, the use of poison in catching of fish on Lake Victoria came to a climax

in 1999, when the entire fishing industry had to be closed down by the authorities for three months while the problem was being sorted out. The practice represented a threat not only to the resource but also for fishers who went without jobs and incomes for the period and consumers were not able to obtain fish supplies from Lake Victoria for that long.

The relevance of culture is seen in different ways. As part of a long history, the Uganda woman on Lake Victoria has not been allowed by the tradition to go out on a boat for the purpose of catching fish. This has denied her opportunity to the more paying work of fishing and she has been confined to the less lucrative role of fish processing and fish trade. As a result of these cultural restrictions, many women have resorted to non- boat fishery work. However, these activities involve the use of traps and baskets, which are illegal gear. They are carried out in shallow waters and bays, generally believed to be breeding and nursery grounds for fish. This is an example of how culture threatens sustainability of the fisheries. Even from the consumption point of view, the tradition where women are served meals after men means that they often get less food, in the situation where there is often food shortage. Strong cultural beliefs also still exist with respect to the use of toilet facilities among some members of the fishing communities, particularly women. Non-use of sanitation facilities not only threatens the health of the fishing communities but the human waste washed down into the lake is a threat to the quality of Lake Victoria waters.

The literature was examined for models for the shift from unsustainable tendencies to sustainability. Maintaining of SD would require that regulations be periodically injected into the fisheries. Drummond and Symes (1997) observe that there are unsustainable tendencies that develop in response to regulations when they are introduced. An attempt to explain these tendencies is made with the use of a model. They are concerned that SD in fisheries and elsewhere has made little progress and this is attributed to the current approaches to sustainability involving policies which attempt to address unsustainable events and practices directly. In their words, "If we accept that prevention of the unsustainable is a fundamental goal of sustainable development, then a realist understanding of the causality acquires considerable significance. The multi-level conceptual framework provided by a realist analysis signifies and elucidates

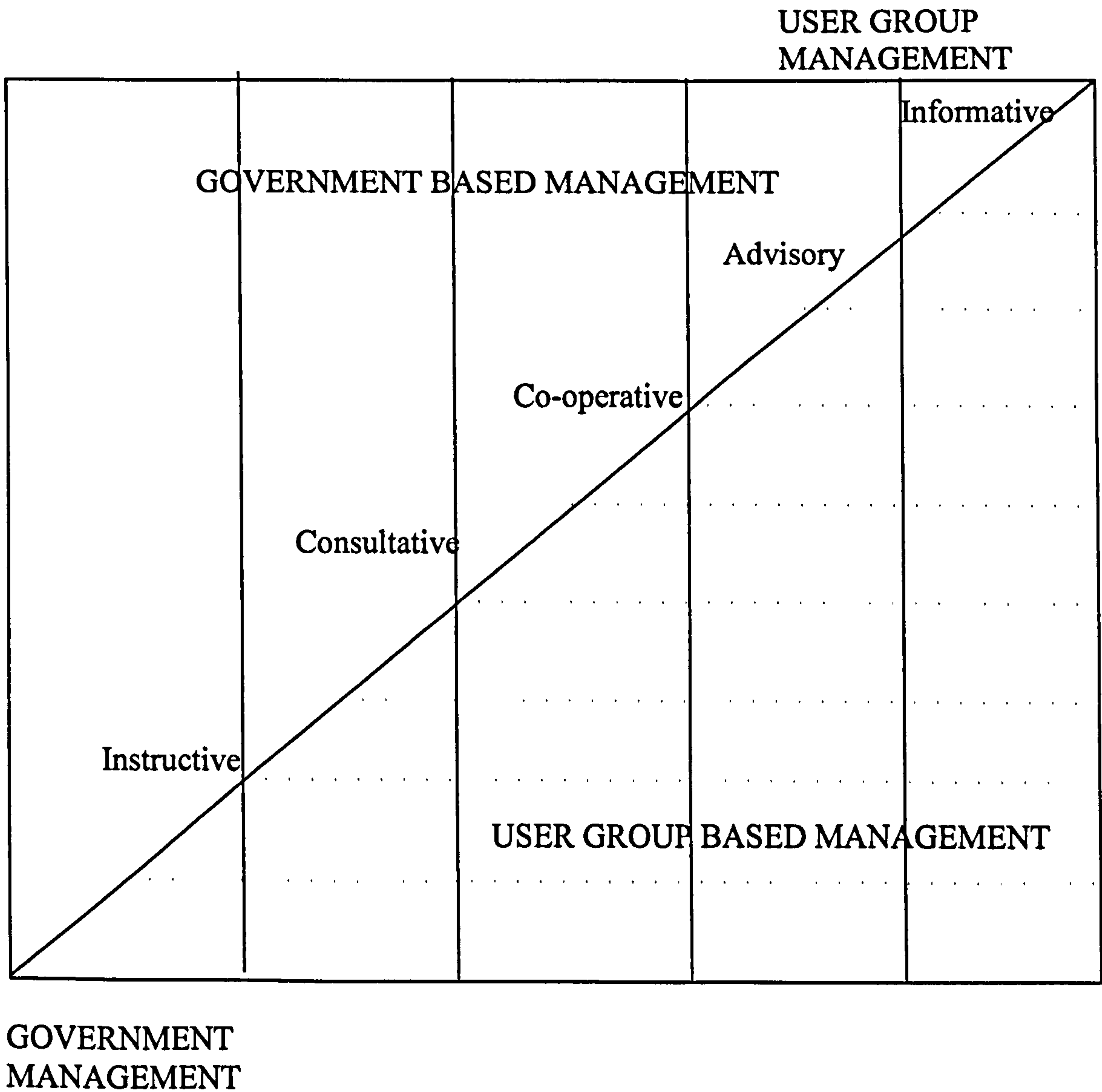
a range of moments where policy might be targeted. The most obvious approach is to intervene directly at the level of contingency. But this usually occurs in practice, not least in fisheries management. Faced with a particular, crisis new regulations are introduced or old ones strengthened. However, while intervention at this level may prevent a particular event occurring at a particular time and in a particular place, the tendency remains and is likely to redirect the effort to other species, other locations or other times. This approach is analogous to treating a patient's symptoms rather than the disease. It may appear to be pragmatic and capable of producing results, but it is at best partial and temporary" (Drummond and Symes 1997 p. 154). Its conclusion is that policy must move beyond treating unsustainable practices and events as discrete occurrences to a situation where they are addressed as outcomes of economic and social process and the conditions in which they occur.

There are examples from the fisheries of Uganda's Lake Victoria to support the model. Fishers have continued to respond to the mesh-size regulations imposed on the gill nets in different ways. The regulations stipulate for the use of gillnets of 5-inch mesh size and above. However, these nets are viewed by fishers as expensive and unaffordable, particularly to people fishing for a livelihood. Furthermore, their perceived catches are also much less than those from smaller mesh-sized gears. Consequently, fishers have been finding new avenues either in migrating to areas with less control, such as the isolated islands, or in the use of cast nets and active gill netting, both of which are also prohibited methods.

The success of regulations in fisheries is dependent on the management regime within which they are applied. Sen and Nielsen (1996) outline the range of management options, ranging from state-based to community based extremes. Under the state-based management model, the role of user groups in management would be minimal as government would be the dominant partner, setting the agenda. This is the "instructive" model of management. The next stage is the "consultative" type of management. Government would still provide the lead role, but there is greater involvement of the user groups in the management process. The stages that follow include the "co-operative" model, where there is equal power between the state and user groups; the "advisory" type, where the user groups assume greater role than the state, which is reduced to offering

management advise. At the extreme end, the user group would shoulder the burden of management and government would only be informed of the management process.

Figure3.1: A Framework for Developing a Co-Management Model



Source: Sen and Nielsen (1996)

Management on Lake Victoria, Uganda, has for decades been officially of the “instructive” type, where Government was the dominant player and user groups took the regulations as set by Government and were required to obey them. Enforcement of these regulations lay with Government. However, because of the management failures experienced under this arrangement, there is now a desire to move out of this model, identifying greater role for user groups. A management

plan for the fisheries is being formulated to this effect, which will gradually move the fisheries under a co-management arrangement.

However, for resource regulation under co-management to be successful, Ostrom (1990) and Pinkerton (1989) have proposed a set of criteria that needed to prevail within the natural resource. These criteria relate to appropriate institutional framework for governing common property resources and to organisation of the user groups for collective action. Abila *et al.* (2000) examined the relevance of these criteria for the Kenyan situation of Lake Victoria fisheries, which has some similarities with that in Uganda. The criteria are discussed below, with an attempt to relate them to the Uganda situation.

- i) Clearly defined boundaries: the physical boundaries of the area to be managed should be distinct so that fisher groups can have knowledge of them. The territory enclosed by a boundary should be of a size that allows for management with available technology, e.g. transport and communication.

On Lake Victoria, Uganda, territorial borders exist, although fishers are known to regularly cross them informally in the course of fishing and fish marketing. With respect to district borders within Uganda, again these are marked on the maps but hardly recognised by fishers. There are no boundaries separating fishing grounds for the different communities. The lake is considered to belong to Government, with open access to all. Furthermore, given the migratory behaviour of the main commercial fish species, fishers have developed the practice of moving across the lake in search of better catch. Indeed, part of the indigenous knowledge among fishers is where to go for the fish in the different months of the year. Such movements can be wide, covering a number of districts. The concept of boundary and the fishing restrictions associated with them is only being introduced now for debate and is seen as a new concept in fishing. SEDAWOG (2000b p. 60) reports that most Ugandans would fish anywhere on the lake, reflecting a lack of the concept of physical boundary among them. Other forms of boundaries, notably landing sites and markets are equally regarded as open, requiring no more than self identification and registration before one can make use of them. Ecosystem boundaries, notably fish breeding and nursery grounds, would be treated differently and generally respected by many fishers. However,

in Uganda these areas are generally unspecified, particularly with respect to the important commercial species of *L. niloticus* and *R. argentea*. There has been a continuous call on research from local communities as well as from Government to identify and demarcate these areas for the purpose of protecting them, but this is yet to be achieved.

- ii) Membership clearly defined: individual fishers or households with rights to fish in a bounded fishing area, and participate in area management, are clearly defined. In addition, the number of fishers or households should not be too large so as to restrict effective communication and decision making.

There may be many commonalities between individuals within a fishing community, for example tribe, types of gear used or species targeted. However, ownership of boat is regarded as the most important consideration and could form the basis for granting rights to fish in a bounded fishing area. With the exception of a few landing sites, the number of boat owners is usually small, averaging about 20 and given that communication is mainly verbal, this number is appropriate for effective communication. However, this assumes that the problem of fisher migration, referred to as 'nomadism' is addressed and boats are able to operate within their bounded fishing areas. SEDAWOG (2000b p. 60) reports that a letter of introduction was required for an outsider to fish from a landing site in Uganda.

- iii) Group cohesion: the fisher's group or organisation should permanently reside near the area to be managed. There should be a high degree of homogeneity, in terms of kinship, ethnicity, religion or fishing gear type within the group. Local ideology, customs and belief systems should create a willingness to deal with collective problems. Finally, there should be a common understanding of the problem and of alternative strategies and outcomes.

This condition only exists partly, however, it can be developed. Common tribes and cultures, similar targeted species and common perceptions of the problems of the lake exist to some degree and would provide a basis for this cohesion.

However, the tradition had been weakened by new species, large number of newcomers on the lake and new techniques of fishing developed.

- iv) Existing organisations: the fishers have some prior experience with traditional community-based systems and with organisations, where they are representative of all resource users and stakeholders interested in fisheries management.

Historically, there have been local institutions known as fishermen's committees, led by a head fisherman, called a "gabunga." However, a recent development has been the establishment of the Landing Management Committees (LMC), initially to fight fish poisoning but thereafter, charged with general management roles. SEDAWOG (2000a) and Atai *et al.* (2000) give the responsibilities of the LMC. It supervises the sizes and quality of fish landed by fishes and ensures that only the correct size and good quality fish is landed and presented for sale. It can arrest a fisher for using illegal gear and take him to the Fisheries Department staff or straight to the Police. It assists the Market Master to ensure that all fishers pay revenue but also ensuring that fishers are not overcharged in revenue. It registers new fishers at the landing site and issues permits to new comers. It also resolves fishery related disputes among the fishers. The first LMCs were appointed by Government as a task force but subsequently, they have been elected by fishers for indefinite periods. The LMCs could, therefore, be strengthened to play the role provided for in this criterion.

- v) Benefits exceed cost: community-based organisations are more likely to be 'robust' where individuals have the expectation that the benefits to be derived from participation in, and compliance with, the organisation will exceed the cost of investment in it.

There are still many fishers who see LMC as a creation of Government to fight fish poisoning, of little use to the fishers. LMC will need to demonstrate its benefits to the communities to become better able to fulfil this role. So far, the benefit from LMC has been control of fish poisoning and restoration of market for fish. Fishers would like to see LMCs provide stronger representation to Government, resist corruption and assist in securing inputs apart from the

existing responsibilities. Costs associated with the LMCs are mainly in the direct contributions in fish and cash as directed from time to time.

- vi) Participation by those affected: community-based institutions are more likely to be 'robust' when most of the individuals affected by management arrangements are included in the group that makes, and can change, these arrangements.

Again, LMC is expected to grow to occupy this position. At the moment, it is difficult to say if most fishers are with the LMCs or not, because it is a creation from above and fishers do not have the choice. Furthermore, LMCs and other CBOs in the fisheries are said to lack capacity and specific skills relating to fisheries as well as financial resources (MAAIF 2000 p. 8). In other sub-sectors of agriculture, there is a large number of CBOs but they have the similar problem of being weak institutions (MAAIF and MFPED 2000 p. 40).

- vii) Management rules enforced: the management rules are simple. Monitoring and enforcement can be effected and shared by all fishers.

At the moment, rules are not adequately enforced and they are not even very clear to fishers. SEDAWOG (2000b p. 53) reports that the main reason for fisheries resource decline was disobeying of regulations. However, efforts to improve on fisheries laws and regulations are now going on. At the same time, Atai *et al.* (2000) report that fishers have been instituting their own bye-laws to govern both fishery related and other aspects of their activities.

- viii) Local rights to organise: the fisher group has the right to organise and make arrangements related to its needs. There is enabling legislation from the Government defining and clarifying local responsibility and authority.

There are provisions within the Local Governments Act, 1997 for Lower Local Governments to make bye-laws and these provisions could be exploited to fulfil this condition. However, fishers have not taken the advantage due to lack of awareness about the provision, weak leadership with respect to resource management issues and lack of knowledge in formulating such bye-laws. There is a danger that if communities are sensitised, trained and aided by Government in setting up such bye-laws, this would be viewed as a top-down process and the

bye-laws regarded as other Government's laws, devoid of community ownership. Government of Uganda (2000) provides an example where the Jinja Wetland Resources Management Bye-laws, 2000 was formulated for the Jinja Municipality under a partnership involving the Municipality, research and women user groups on the wetlands. The partnership and bye-laws are discussed further in paragraph 8.3.

- ix) Co-operation and leadership at community level: there is an incentive and willingness on the part of the fishers to actively participate, with time and effort and money, in fisheries management. There is an individual or core group who takes leadership responsibility for the management process.

Fishers are known to co-operate by attending meetings, contributing cash for various community demands and doing communal work. MFPED (2000d) identifies the areas of community activities at landing sites in Kalangala District. The first was participation by all community members equally in digging roads and improving the general sanitary conditions, an obligation known locally as 'bulungi bwansi'. The people who usually had no time to participate included women who operated eating houses and bars. However, they always ensured that they contributed cash in lieu of their labour. Drama was another communal activity, meant to foster unity, provide entertainment and deliver important social messages. It was, however, not compulsory and some men were reported to refuse their wives to participate. Cleaning up of communal toilets and landing beaches, particularly removing water hyacinth was another activity. Activities to do with worshipping were also communal, especially among women. Lastly, when there was a boat accident, it was an obligation for everyone to participate in searching for the dead bodies and contributing towards their burial expenses. Even women were not allowed to go to their gardens until burial had been carried out. Communal activity spirit was, however, often frustrated by corruption within the leadership of the fishing communities. Furthermore, not all landing sites had capable individuals who could take the leadership responsibility.

- x) Decentralisation and delegation of authority: the government has established formal policy and/or laws for the decentralisation of administrative functions and the delegation of management responsibility

and/or authority to local government and local government organisation levels.

The Decentralisation Statute of 1993 and the Local Governments Act, 1997 would provide for this. Article 40 of the Local Governments Act, 1997 states: “An Urban, Sub-county, Division or Village Council may, in relation with its powers and functions make bye-laws not inconsistent with the Constitution, or any other law enacted by Parliament, or an Ordinance of the District Council or a bye-law passed by a higher Council ... ” (Government of Uganda 1997 p.36). The draft National Fisheries Policy recognises this as follows: “The decentralisation of natural resource management of local authorities has profound implications for natural resource management in Uganda generally and the fisheries in particular. Despite a number of problems, decentralisation has provided opportunities for grassroot participation in fisheries management and development” (MAAIF 2000 p. 8)

- xi) Co-ordination between government and community: a co-ordinatory body is established, external to the local group or organisation and with representation from the fishers’ group or organisation and government to monitor the local management arrangements for resolving conflicts, and reinforce local rule enforcement.

This body is at the moment not yet in place within the fisheries. Geheb and Crean (2001) have floated the idea of such a body as part of the discussions under the on-going fisheries management plan formulation exercise for Lake Victoria. However, no decisions have been reached yet. In the example of the wetlands partnership in Jinja Town, the Municipality plays the role of such a body. However, its effectiveness is hindered because it is a fully Government body, expected to give priority to the interest of Government in case of any conflict. Attempt to set up a separate Steering Committee composed of representations from Municipality, Research and the User Groups was not successful, due to lack of facilities and resources to run such a body.

As user groups prepare to take up greater roles in fisheries management under co-management, it is important to understand the relationships between individuals in the user-groups over the resource. WPTPA (1997) provides a

framework for this analysis as developed by the Workshop on Political Theory and Policy Analysis, referred to as the Indiana University model. The model highlights the considerations that may explain why individuals keep or break institutional rules and how conflicts are resolved. At the core of the model is a triangle of strategic assets that influence the working relationships between individuals and with the group. They include group size, where the smaller size works better; mode of communication, with preference for face-to-face contact; holding of shared norms, particularly if they are cultural; congruency of interests and resources and track record over time. These factors are considered relevant in explaining the reactions of individuals in the managing of natural resources. The model could relate to the Uganda fishing communities. These communities consist of small groups found at isolated landing sites. Their communication is face-to-face, by word of mouth. They share several norms, mainly relating to the fishery and often incur expenses on settling issues relating to the fishery. They usually know each other's past and in the case of new comers, efforts are made to establish their track records and thereafter, they are admitted into the communities as members who could be trusted. As a result of their triangle of assets, there is co-operation at the landing sites for purpose of successful fishing, marketing and settling internal disputes. However, corruption, which is said to be rampant within the general society in Uganda, often threatens this triangle of assets and the capacity to manage the resource.

The literature was further examined for what sustainability would mean in terms of Uganda's fisheries. The Agenda 21 provides a concrete definition of the concept of SD in relation to fisheries. Starza (1993) reports the provision as follows: "The problem of the world's oceans and the overexploitation of its living marine resources are devastating their enormous productive potential. These activities are also immediately threatening the human populations which are dependent on the sea for their subsistence and livelihoods. Overfishing and the degradation of marine habitats throughout the world are depleting a major global resource. Steps must be taken to maintain fish populations at sustainable levels. National licensing programmes should be used to allocate access to fish resources more equitably among commercial and recreational fishers. Developing countries need assistance to promote deep-sea fishing to reduce the

use of coastal fisheries” (Starza 1993, p. 130). While the provisions relate to ocean fisheries, the concerns for overexploitation and degradation of fish habitats are relevant to Uganda’s Lake Victoria fisheries. Control and equitable distribution of access to the fishery to include not only commercial and recreational but also artisanal fishers would be part of a SD for Uganda’s fisheries. Participation of the fishers, through co-management, would be part of this resource control. The success of SD in Uganda would also involve measures to improve the well-being of the communities. Improved skills, particularly in post-harvest handling and processing activities that enhance value added to the catch could be provided under a well planned extension program. Provision for credit and investment in infrastructure and utilities would be required to promote fishery as well as alternative livelihood activities. Provision of services that improve the quality of life for fishing communities, particularly health and education, would form part of the program. In addition, local institutions that promote participation in resource management and economic development would be necessary. Producer organisations and other interest groups need to evolve and build capacity to play their role effectively. Uganda has no access to the sea and would not be looking at exploiting deep-sea fisheries in the near future. However, aquaculture remains an option for alternative fish supply and source of livelihood.

3.9 Concept of Poverty

The meaning and definition of poverty from the different perspectives in the literature was examined. Alcock (1997) explains that poverty has been a subject of close attention to different people including academics, campaigners, development planners and politicians due to its huge presence, long history and great impact on society. The need for the concept to be fully understood and to identify and measure poverty in order to deal with it effectively has been recognised. For a long time, however, there had been no agreement on one correct scientific definition of poverty, because it was “.... a political concept - and thus inherently a contested one” (Alcock 1997 p. 3). He continues to report that early work identified lack of material resources as the main element in poverty, limiting one’s command over goods and services. In Britain, attempts

to define poverty dated back to the end of the nineteenth century to the work of Booth and Rowntree on absolute poverty (Alcock 1997 p. 68). This gave rise to the concept of poverty line, initially defined as the minimum package of goods and services necessary for “subsistence”.

Booth (1889) in a pioneer study of poverty in London in 1880s had defined the poor as ‘those living under a struggle to obtain the necessities of life and chronic want’ (Booth 1889 p.33). Iliffe (1987) defined absolute poverty: as poverty measured against the minimum necessary to maintain a person’s physical efficiency, while relative poverty was measured against the average living standards of a particular society or by comparison to another society. In his work on the African poverty, however, he observes that the problem of definition of poverty was that the poor were diverse and poverty had many facets, so a precise and consistent definition was not feasible (Iliffe 1987 p. 2). Ravallion (1992) argues that absolute poverty should be defined in terms of a stringent survival level but should remain fixed over the entire domain of the poverty comparison. He states: “Thus absolute poverty comparisons will deem two persons at the same real consumption level to both be either ‘poor’ or ‘not poor’ irrespective of the time or place being considered, with or without some policy change within the domain” (Ravallion 1992 p. 25). Townsend (1993) raises criticism with the ‘subsistence’ concept for its minimising of the range and depth of human needs to just the physical needs, namely food, shelter and clothing, disregarding the importance of the social needs of people (Townsend 1993 p. 31). Arising from this criticism, the concept of “basic needs” was introduced as an extension to include community facilities that provide for the social needs, namely health and education. Its restriction to physical facilities, however, proved a limitation in the scope of the “basic needs” concept, because social needs were said to go beyond the physical facilities of the community and included the cost of fulfilling one’s obligations to family and society. To quote from an author, “People are relatively deprived if they cannot obtain, at all or sufficiently, the conditions of life – that is, the diets, amenities, standards and services – which allow them to play the roles, participate in the relationships and follow the customary behaviour which is expected of them by virtue of their membership of society. If they lack or are denied resources to obtain access to these conditions of life and so fulfil

membership of society they may be said to be in poverty” (Townsend 1993 p. 36). This extended idea of poverty was also reflected in the World Bank concept of the poverty line in 1990 as follows: “ A consumption-based poverty line can be thought of as comprising two elements: the expenditure necessary to buy a minimum standard of nutrition and other basic necessities and a further amount that varies from country to country, reflecting the cost of participating in the everyday life of society” (World Bank 1990 p. 26). This perception of poverty, also referred to as the concept of “relative deprivation” emerged both to widen the scope of social needs and also to allow for comparisons over time and across regions (Alcock 1997 p.76, Townsend 1993 p. 33). For this reason, it has gained acceptance as a more scientific and international definition of poverty than the purely “subsistence” or “basic needs” concepts.

Following on this development, new dimensions of poverty have come to light with new experiences with developing countries. Lack of ownership and access to productive resources and assets became recognised as an important element of poverty, limiting the capability of the poor to generate income to meet one’s physical and social needs. Access to social services, notably health and education became important not only as ends in themselves but also as means for greater productivity. It is well accepted that the poor do not only have low life expectancy and are illiterate but their productivity is retarded as result of ill-health and lack of education (OXFAM 1996). Recent work has also shown that the multi-dimensional nature of poverty goes further to include risk and vulnerability and a sense of voicelessness and powerlessness as features of poverty. (World Bank 1999). The poor are also often isolated, owing to poor communication, preoccupied with survival, indebtedness and physical weakness (Chambers 1983 p. 112, Dixon 1990 p. 50). This relates back to the Ostrom criteria for successful co-management which empowered the vulnerable if implemented.

In its conceptualisation of poverty, Uganda’s PEAP, formulated in 1997 and revised in 2000 aimed at addressing the country’s poverty, identifies three levels of poverty, based on participatory poverty consultations (MFPED 1999 p. 58). These include the individual, the household and community levels and at each level, different elements of poverty would feature more prominently. MFPED

(2000c) reports that the consultations were carried out under the Uganda Participatory Poverty Assessment Process (UPPAP). UPPAP was a project in the Ministry of Finance, Planning and Economic Development that was developed following the formulation of PEAP in order to consult the poor in Uganda and bring their voices into the planning for poverty eradication. Its aims were to develop better understanding of poverty and assess the impact of Government policies on the poor. The main elements identified include low incomes that were insufficient to meet the basic needs of the poor, lack of sufficient food and poor nutrition among many people within the population, poor health resulting from common diseases and limited access to clean water. Causes of these dimensions of poverty are explained later in this chapter. It will be noted from these dimensions that the Uganda poverty links strongly with agricultural life. This is because the majority of the poor are to be found in the rural areas, where farming is basically their only option for survival.

3.10 Poverty Indicators

The literature was examined for the available poverty indicators that could be applied to the Lake Victoria situation. This was because it was important to develop consensus on the main indicators of poverty as part of a successful poverty alleviation program. It would allow for the existence, nature and magnitude of poverty in a given situation to be established and to monitor its response to intervention. Weldnitzer (1996) and the World Bank (1999) provide a discussion of the indicators in poverty. They explain that although the indicators are supposed to be outcomes of a poverty situation, difficulties are often encountered in distinguishing outcomes from the causes of poverty, as many of the outcomes are themselves also causes of further poverty within the 'vicious cycle' of poverty. Consequently, many of the common indicators of poverty are also known causes of the problem. Furthermore, because of the conceptual variations of poverty, translating some of the general poverty elements into specific indicators has been a problem. Lastly, indicators are useful if they are measurable but this is often not the case due to inadequate data availability in many of the developing countries. It is, therefore, not possible to have an absolutely watertight and comprehensive set of indicators, but many

alternatives are possible. They report that the main indicators that have been used in the past, given with gender disaggregation where data permitted, included per capita income and consumption, ownership and access to resources and productive assets, wealth, health status, level of education and access to decision making at the local and national levels.

Following the wide experiences and deeper understanding of poverty in the different situations world-wide over the 1990s, including the perceptions of the poor people themselves, the World Bank has come out with a broad approach to the main indicators of poverty. The World Bank (2001c) reveals the reasons for giving a broader approach. First, it increases the understanding of the causes, bringing to fore more areas of action and policy on the poverty reduction agenda. Secondly, since the different aspects of poverty interact and re-enforce each other, understanding these complementarities would be essential for designing and implementing programs and projects that help people escape poverty. (World Bank 2001b p. 15). The indicators identified include material deprivation, arising from inadequate income available to the individual or household; low achievements in education and health, of concern both in their own right, but also as factors in material deprivation; exposure to risk as a result of being in a vulnerable situation and a sense of insecurity as a result of being voiceless and powerless in society. These indicators are said to restrict the “capabilities that a person has, that is, the substantive freedom he or she enjoys to lead the kind of life he or she values” (Sen 1999 p. 87).

Uganda has, under the Poverty Eradication Action Plan (PEAP), been developing indicators relevant to her own poverty situation. These indicators have been improved upon with the progress of the on-going Uganda Participatory Poverty Assessment Process. They include low incomes, ignorance, illness, insecurity, isolation and powerlessness (MFPED 2000b p. 77). Broadly, these indicators compare well with those by the World Bank, formulated on the basis of the global poverty situation. It shows that Uganda’s poverty is much the same as the contemporary global poverty.

3.11 Measuring Indicators

The recent history of measuring poverty dates back to the work of Seebohm Rowntree in the 1890s in England, where he carried out his first surveys in York to establish the proportion of the population living in poverty (Alcock 1997 p. 115). This and much of other subsequent work were criticised because they were based on a definition of poverty that was limited to the subsistence of an individual. For this reason, only the physical needs, namely food, shelter and clothing were considered. In addition to physical needs, a person also had social needs, relating to his/her obligations to perform socially demanding roles as a worker, citizen, parent, neighbour and partner. The concept of 'basic needs' evolved out of this criticism and basically expanded the indicators of poverty beyond the subsistence needs to include ability "to play roles, participate in the relationships and follow the customary behaviour which is expected of them by virtue of their membership of society" (Townsend 1993 p. 36).

Much of the recent world poverty measurement work is guided by the World Bank, with a view to maintaining an overview that goes beyond individual experiences within and between countries. The purpose of measuring poverty is a) to aid formulation and testing of hypotheses on the causes of poverty; b) to obtain aggregative view of poverty over time; c) to set measurable targets for assessing actions (World Bank 2001b p. 15).

Ravallion (1992) provides the methodological tools for doing poverty analysis. He explains that the main purpose of measuring poverty was to be able to make a poverty comparison, either qualitatively or quantitatively. The measures he describes include the household survey, the use of the consumption per equivalent adult to reflect differences in household sizes, the food-share of the household expenditures, nutritional indicators and anthropological methods involving close observation at the household level over an extended period of time.

The World Bank (2001b) provides further report on the different methodologies that have been developed to measure the different dimensions of poverty. Income poverty is measured based on household income and consumption

surveys, which are also presently the most applied poverty measurement methodologies around the world. The strengths of this method are that first, the samples in the surveys are usually nationally representative, thus can allow for national inferences and evaluation of poverty to be done. Secondly, these surveys usually also generate non-monetary information, so it is possible to take advantage of these to obtain a broader picture of well-being and poverty, investigate relationship among different dimensions of poverty and test hypotheses on the likely impact of policy interventions. However, two types of weakness have been identified with the method. First, variations in survey designs between countries and over time often make comparison difficult. Secondly, income and consumption surveys are carried out at the household level. While these could show inter-household inequalities, intra-household inequalities, notably between husband and wife, are often not adequately brought out by the method. A poverty line is established and used under this method, defined as the critical cut-off in income or consumption, below which a household or individual is said to be poor. Although international poverty lines are useful for producing global aggregates of poverty, they are often not suitable for analysis of poverty within a country. Therefore, national and even regional poverty lines are frequently developed, where prices and access to goods differ. The poverty line is mostly used with the “headcount“ method to assess poverty, whereby the percentage of population whose income or consumption is below the line is calculated. A disadvantage of the method is that it puts all population below the poverty line together and does not reveal any variations of incomes among the poor.

According to the World Bank (2001b), measurement of health and education are more difficult. The main health indicators, namely infant and under-five mortality rates, derive from censuses, surveys and vital registration. Censuses and surveys are periodic, so the information for the years in-between would have to be extrapolated. Changes in conditions over the period often hinder the success of such extrapolation. Vital registration would be the more reliable option, as they take place on a continuous basis and involve every single case of the event. However, its coverage in most developing countries is still poor. For life expectancy, which is another important health indicator, this is even more

difficult because it is not measured directly. In the case of education, the main criticism with school enrolment is that it does not properly represent actual school attendance. Preference would be for net primary school enrolment rate but this data is presently available for very few countries yet.

The report examines measurement of vulnerability, explained earlier to mean the experiencing of an episode of income, health or education poverty and the probability of being exposed to other risks such as violence, crime, natural disasters or being pulled out of school. This is done using “household panel data,” derived from surveys that follow the same households over several years. Indicators commonly used include household assets and alternative sources of income. However, because the forms of manifestation of vulnerability are so diverse, no single set of indicators would adequately monitor vulnerability.

In order to capture voicelessness and powerlessness, the World Bank (2001c) recommends the use of participatory surveys, polls and national surveys on the qualitative variables. However, the difficulties involved are acknowledged in the statement that “measuring these dimensions of poverty in an accurate, robust and consistent way so that comparisons can be made across countries and over time will require considerable additional efforts on both methodological and data-gathering fronts.” (World Bank 2001b p.19).

UBOS (2000b) reports that Uganda Government operates two types of poverty lines, the Consumption Per Adult equivalent (CPAE) and the Absolute Poverty Line (APL). CPAE is a measure of household consumption that has been weighted by the calorific equivalence scales, so it is basically a food consumption measure. APL, on the other hand, consists of a food poverty line and an estimate of non-food requirements (UBOS 2000b p.45).

3.12 Causes of Poverty

Having examined the nature and indicators of poverty, the next thing is to identify its causes to establish a basis for developing a policy response to it. A wide range of factors and events, acting mostly in combination but sometimes

singly, have been considered responsible for the different poverty situations in the recent history of the world.

On the extreme end, there were people who explained poverty in the weaknesses of the individuals themselves, a view now generally discredited (Holman 1978, Murray 1990). This so-called “pathological model” of poverty causation has been used by the underclass theorists and it seeks to explain the individual’s non-achievement in one’s genetic and psychological factors (Alcock 1997 p. 37). Other people have referred to it as the “character deficiency” cause of poverty. In the case of developing countries, the model attributed poverty to the nature of societies in these countries, where values and practices perpetuated “backwardness”. Idleness, drunkenness, gambling, unwise expenditure, incompetence, ignorance and even lack of intelligence were said to be responsible for the poverty of individuals, families and even communities. However, according to Townsend (1993 p. 97). “Empirical studies of the population in general and of the poor in particular throughout the last hundred years have exposed this as a wholly misplaced or, at the most, as a very small factor in the multiple causation of poverty”. Despite this view, the idea has kept reappearing and gaining momentum in different societies, indicating that not all of these explanations can be completely dismissed (Dixon 1990 p. 53).

Within the current debate on poverty causes, there are also those of the “environmental school of thought.” They see poverty arising from increasing shortages of resources, particularly as a result of population expansion. Poor environmental conditions and degradation of the environment are also viewed as major causes of poverty (Dixon 1990 p. 53). These ideas form the basis of the SD debate, where a two-way link between the environment and poverty was identified, as discussed earlier in this chapter.

The next school of thought belongs to the “political economy” or the “structural factors” view of poverty. They see processes that concentrate power and resources in a few hands as the root cause of poverty. These processes often run from international to national and sometimes local levels. At the international level, they see the power structure within the major trade and aid agencies not being in favour of developing countries. This includes the United Nations and related agencies developed to deal with different aspects of international poverty.

The point is illustrated in this quotation: “Money talks, and the origins and staffing and financing of these organisations helped to explain not only how the pattern of world trade is supervised and disciplined but how world resources are distributed, and wealth is produced at the expense of the poor.” (Townsend 1993 p. 103). A related factor is the emergence of the phenomenon of “internationalisation” of industry, whereby transnational corporations have become a major force, with their subsidiaries or divisions all over the third world. Their power is exercised in determining the relocation of industries within the countries of the Third World, thus influencing job opportunities in these countries. The international market is another factor influencing poverty at the local level. The point is illustrated with the following quotation: “If the international price of maize falls, then the national wholesale price falls as a result, and merchants will try to pass the loss caused by the price fall down the chain. The smallest and least powerful merchants and farmers lose most. The poorest households will be most vulnerable and will lose most in the process” (Dixon 1990 p. 55). Where they do, the market mechanisms may also provide opportunities which are out of reach of the poor people, in terms of technical skill requirements. Within the national and even local levels, poverty may arise as a result of discrimination between the different social divisions (Alcock 1997 p. 133-193). Of particular concern is the emerging phenomenon known as “feminisation of poverty”, a concept which refers to the greater risk and suffering of poverty among women than men as a result of gender roles in society and discrimination on the labour market (Wee & Heyzer 1995 p.36). To elaborate the point, (Townsend 1993 p. 106) writes: “The starting point is that more women than men experience poverty – for all types of society for which a reasonable range of information exists. This poverty is compounded over a lifetime. The expectation that women will reproduce, perform the predominant roles of rearing children and caring for family members in sickness, disablement and old age unpaid, and will not have formally constituted or defined claim on the income and other resources obtained by their male partners or other males in the family, underlies their economic dependence. When this socially engineered subordinate status is combined with the lowering effect of long-term and short-term policies of discrimination against women, such as unequal rates of pay, uncompensated interruption or termination of paid employment, restriction to

part-time and unsocial hours of employment, diminished social security, reduced access to state, occupational and private benefits, and loss of these benefits once husbands die or lose entitlement, all of which are determined, or indirectly approved, by the state, the impoverishment of women throughout their lives becomes understandable.” The description of roles given for women above fits well with those of Uganda women. In many of the cultures, the place of the woman is at home, caring for the “family” in its broadest sense, without direct remuneration for it. With respect to paid jobs, there are no official policies discriminating against women. However, in practice, women are still regarded as less capable than men with respect to some types of work, thus reducing their employment chances.

Social factors often take the forms of dramatic events that could stabilise in forms of long term poverty. Examples from the 1990s include the break up of Yugoslavia, the desperate loss of life in Somalia, the instability created by the warring factions in Afghanistan, the transformation of the Soviet Union into 15 states, the plight of the Kurds and the Shi-ite Moslems in Iraq following the Gulf War, all examples of rapid impoverishment of many millions of people (Townsend 1993 p. 11).

It is recognised that there is continuous interaction between the “environmental” and “political economy” factors in developing countries and poverty results not just from any one of them but from “the political economy of the environment,” which refers to the shift of resources from communities to large scale powerful producers, leading to concentration of income and access to resources (Dixon 1990 p. 56).

Poverty is a dynamic phenomenon that has been changing in character over the years. The World Bank is one such institution that has been monitoring its development, having been charged with the responsibility of developing policies to enable the Third World to deal with it. In its recent report, therefore, the World Bank says the present-day poverty around the world is basically caused by factors which can be summarised into three categories (World Bank 2001b p. 34). They are as follows:

1. Lack of income and assets to attain basic necessities of life, namely food, shelter, clothing and acceptable levels of health and education. These may be human assets, such as the basic or skilled labour; natural assets like land; physical, financial or social assets, including networks of contacts and political influence.
2. A sense of voicelessness and powerlessness in the institutions of state. This arises as a result of absence of the rule of law, corruption and other forms of bad governance. It leads to a sense of insecurity in the poor and often prevents them from taking advantage of opportunities outside their immediate areas of security.
3. Poverty caused as a result of the vulnerability to adverse shocks and inability to deal with them. This takes the form of frequent risks arising from the circumstances in which they live and their inability to cope with them.

In the Uganda situation, MAAIF and MFPED (2000) report on the causes of poverty as highlighted in PEAP, which is the framework for action against poverty and in PMA, which elaborates PEAP within the context of agriculture. Based on the experience with poverty work in the country so far and drawing from consultations of the poor under UPPAP, Uganda's poverty is said to be caused by the following factors:

1. Constraints to productivity, including limited income generating opportunities, limited access to land, lack of financial services, poor market for output and unfair and high taxes.
2. Poor health, due particularly to HIV/AIDS and malaria, poor nutrition and old age.
3. Undesirable social behaviour, particularly excessive consumption of alcohol by men, idleness, lack of co-operation within the household and the community for the purpose of addressing common constraints, abandonment of families by men and death of a supporting family member.
4. Poor infrastructure and services, resulting in low quality delivery of health and education, including inadequate supply of clean water.

5. Insecurity, resulting from insurgency, cattle rustling, theft and robberies, resulting in displacement of communities and disruption of economic life.
6. Poor governance, including corruption which is reported to be highest among the police and health workers, lack of consultation of the local people on issues which affect them, poor planning, poor leadership and lack of support to the poor.
7. Demography and culture, namely high number of children and other dependants in a household, low education, lack of skills, ignorance, lack of information and cultural obligations.
8. Finally, vagaries of the weather and natural calamities that affected production (MAAIF and MFPED 2000 p. 8).

With respect to fisheries, additional causes include poor catches and low fish prices, often associated with remote areas of production.

3.13 Poverty Alleviation Strategies

Recent approaches to alleviation of poverty have been evolving over the last fifty years as a result of deepening understanding of the complexity of development. The World Bank (1990) reports that in the 1950s and 1960 large investments in physical capital and infrastructure were viewed by many as the primary means of development. The policies were put forward as part of an emerging development theory described earlier in this chapter. Focus was on accelerating the nation's rate of economic growth as the strategy for reducing poverty and improving the quality of life. The new nation-states would accumulate wealth through technological advances and industrialisation. However, failure of the benefits of growth to automatically "trickle down" from the rich to the poor led to growing unemployment, inequalities and poverty within the nations, leading to calls for reconsideration of the theory.

The World Bank (1980) reports the change in the approach to dealing with poverty which came in the 1970s, when it became clear that accumulation of wealth would not be enough to bring about the desired improvements in aspects of the quality of life, notably good health status and high levels of education

indirectly as had been envisaged. The report articulated this understanding and argued that improvements in health and education were important not only in their own right but also to promote growth in the incomes of poor people. The role of the state was also questioned, as generally inefficient. The period saw the emergence of what was called the “growth with redistribution,” also known as the “basic needs” or ‘integrated rural development’ strategy. This represented a shift to dealing with security of livelihood and social development matters directly by addressing the issues of employment, poverty alleviation, income distribution and basic human needs (Wee & Heyzer 1995 p. 52). However, there also emerged considerable dissatisfaction with the ability of this strategy to alleviate poverty. While many Third World people benefited from the programs, large numbers did not and many were, indeed, worse-off (Dixon 1990 p. 104). The fundamental problem was that the strategy had not addressed the question of modes of production and consumption, whereby “the process of economic growth was simultaneously a process of wealth accumulation and impoverishment” (Wee & Heyzer 1995 p. 52).

The World Bank (1990) reports the emergence of the “Structural Adjustment” strategy in the 1980s as Third World countries found themselves in serious debt crises. It was also a period of global recession. The recommendations put forward by the World Bank consisted of two parts, namely to encourage a pattern of growth that made efficient use of labour, the poor people’s resource and to invest in the human capital of the poor. The recommendations were based on the contrasting experiences between East Asia on the one hand and Latin America, South Asia and Sub-Saharan Africa on the other. Poverty had fallen sharply in East Asia primarily because they had adopted labour-intensive growth and invested in broad provision of services. For many developing countries it was also necessary to restructure their economies to become more free-market oriented. This involved reducing subsidies and protection, lowering inflation rates, maintaining high savings and investment rates, trade liberalisation and promotion of foreign investment. Investment in infrastructure and providing basic services to poor people in health and education would continue. However, some adverse effects were experienced as a result of implementing Structural Adjustment. These included reduction in social services on which the poor

depended; lowering of wages and commodity prices and creating income uncertainties due to currency fluctuations arising from exchange rate liberalisation.

For the 1990s, the concern for the failure of successive development strategies to benefit the poor led to consideration of other “alternative approaches” (Bartelmus 1994 p. 110-111, Dixon 1990 p. 104 and World Bank 1999). Emphasis was increasingly shifted to issues of governance and institutions. The role of community based programmes, involving “bottom-up” planning with greater “community participation” would be emphasised (Udsholt 1996). To address voicelessness and powerlessness among such groups as the women and ethnic minorities, institutional reforms were proposed, which would give greater say to the poor for broad based participation in local and national level decision making. Security would be provided to the poor by assisting them in building up assets such as land, livestock or savings, which would form the central part of the risk management strategy of the poor. To achieve this required opening up trading opportunities, through infrastructure investments.

The World Bank (2001c) reports that with the beginning of the 21st century, based on the experiences of the 1990s and the cumulative evidence, the World Bank has proposed to continue with the strategy for tackling poverty in three ways, namely promoting opportunity, facilitating empowerment, and enhancing security (World Bank 2001b p. 6). Promoting opportunity would involve expanding economic opportunity for poor people by stimulating overall growth and by building up their assets and increasing the returns on these assets through a combination of market and non-market actions. These would involve providing a business environment conducive to private investment, market reforms, land reforms and provision of social services (World Bank 2001c p. 38). Facilitating empowerment would be achieved through making state institutions more accountable and responsive to poor people, strengthening the participation of poor people in political processes and local decision-making, and removing the social barriers that result from distinctions of gender, ethnicity, race, and social status. Lastly, enhancing security would involve reducing poor people’s vulnerability to ill health, economic shocks, policy-induced dislocations, natural

disasters and violence, as well as helping them cope with adverse shocks when they occur.

DFID (2000) gives the policy of the UK Government towards international development over a three-year period as provided for in the White Paper, launched by Prime Minister Tony Blair and Clare Short, Secretary of State for International Development on the 11th December 2000 under the theme "Eliminating world poverty: making globalisation work for the poor". It provides the strategy through which the UK Government will implement the International Development Targets for a better world. The policy is summarised as follows:

1. **The Challenge of Globalisation:** The UK Government will work with others to manage globalisation so that poverty is systematically reduced and the International Development Targets achieved; promote economic growth that is equitable and environmentally sustainable.
2. **Promoting Effective Governments and Efficient Markets:** The UK Government will help developing countries build the effective government systems needed to reform their economic management, make markets work for poor people, and meet the challenge of globalisation; to reduce corruption and ensure respect for human rights and a greater voice for poor people; to reduce violent conflict, including through tighter control over the arms trade and supporting effective governments.
3. **Investing In People, Sharing Skills and Knowledge:** The UK Government will promote better health and education for poor people and harness the new information and communications technologies to share skills and knowledge with developing countries and help focus more of the UK and global research effort on the needs of the poor, and make intellectual property regimes work better for poor people.
4. **Harnessing Private Finance:** The UK Government will work with developing countries to put in place policies that will attract private financial flows and minimise the risk of capital flight; to strengthen the global financial system to manage the risks associated with the scale, speed and volatility of global financial flows; encourage international co-operation on investment, competition and tax that promotes the interests

of developing countries; encourage corporate social responsibility by national and transnational companies and more investment by them in developing countries.

5. **Capturing Gains from Trade:** The UK Government will support an open and rules-based international trading system, and work to promote equitable trade rules and an effective voice for developing countries; support continuing reductions in barriers to trade, both in developed and developing countries and work to improve the capacity of developing countries to take advantage of new trade opportunities.
6. **Tackling Global Environmental Problems:** The UK Government will work to reduce the contribution made by developed countries to global environmental degradation; to ensure that poverty reduction strategies of developing countries reflect the need to manage environmental resources sustainably.
7. **Using Development Assistance More Effectively:** The UK Government will increase its development assistance to 0.33% as a proportion of GNP by 2003/04 and continue to make progress towards the 0.7% UN target; increase the proportion of global development assistance spent in poor countries, help to improve its effectiveness and to reduce the burdens placed on recipient countries, end UK tied aid and work for multilateral untying; introduce a new Development Bill to replace the outdated Overseas Development and Co-operation Act (1980), to consolidate our poverty-focused approach to development; provide faster and more substantial debt relief for Heavily Indebted Poor countries that are committed to poverty reduction.
8. **Strengthening The International System:** The UK Government will work with others to build a stronger, more open and accountable international system, in which poor people and countries have a more effective voice.

MFPED (2000b) presents the Uganda Government's strategy to address poverty as outlined within PEAP, formulated in 1997 and revised in 2000 aimed at addressing the country's poverty as follows:

1. Creating a framework for economic growth and transformation, with emphasis on providing conditions for the development of a strong private sector that would generate jobs.
2. Promoting good governance, particularly addressing corruption and insecurity in the country.
3. Increasing the ability of the poor to raise their incomes, by addressing issues of infrastructure, market and credit.
4. Taking actions that improve the quality of life of the poor, through health and education (MFPED 2000b p. 81).

These national strategies are broadly in line with global strategies to address poverty.

3.14 Poverty in the Fisheries

There is limited literature addressing specifically the issues of poverty in the fisheries. However, information has been produced on a number of areas, which could contribute to the understanding of the subject. At the policy level, MAAIF and MFPED (2000) present the PMA, aimed at operationalising PEAP within the context of agriculture, where the fisheries sector belongs. PMA is the strategic and operational framework for agricultural transformation in Uganda, through promotion of rapid technology adoption and lowering of production and food costs. MAAIF (2000) is the policy document for fisheries. It gives the details of NFP, which provides strategies to ensure sustainable exploitation of the fisheries resources at the highest possible levels, thereby maintaining fish availability for both present and future generations without undermining the environment. MFPED (2000b) gives a report of Uganda's economic performance for the 1999/00 and plans for 2000/01. However, its explicit coverage of fisheries is limited and much of the information is aggregated under 'agriculture'. MFPED (2000d) reports on a participatory assessment of poverty at Mazinga and Misonzi Landing Sites in Kalangala Districts. The study was aimed at bringing the voice and perspective of the poor into national and district planning for poverty reduction in Uganda.

There have been a number of studies carried out at the sectoral level in the fisheries. Reynolds and Greboval (1988) give a report of a regional study of Lake Victoria, instituted to assess the socio-economic impacts of the Nile perch proliferation on Lake Victoria. Reynolds and Ssali (1991) discuss development of industrial processing in Uganda, based on the Nile perch fishery. Kitakule and Reynolds (1990) give a report of a national study of the fishing communities of Uganda, describing their characteristics and organisation. FCSEP (1997) provides an economic perspective of the fisheries sector of Uganda, presenting a diagnostic analysis of the main fisheries sector components with a view to identifying the constraints to performance and proposing appropriate intervention measures.

Other studies have addressed issues of resource management from the socio-economic perspective. EPRC (1999) gives a comprehensive report of the impact of policy on the sustainability of the fisheries. SEDAWOG (2000b) reports on a regional survey under the LVFRP aimed at assessing the conditions for establishing co-management on Lake Victoria. In an earlier study, Geheb (1997) looks at the historical development of legislation on Lake Victoria, Kenya. Ikwaput-Nyeko (1999) reviews the existing management systems in Uganda, evaluates the attitudes of fisherfolk to resource utilisation and management and solicits views on the possibility for co-management. Atai *et al.* (2000) and SEDAWOG (2000a) report on participatory baseline assessments at Nkombe and Lwalalo Landing Sites, as part of the co-management surveys under the LVFRP.

In the area of fish marketing, Crutchfield (1958) presents one of the earliest marketing studies, examining the pattern of fish trade in Uganda. Kirema-Mukasa and Reynolds (1990) give a report of a marketing survey, which covered Lakes Victoria, George and Edward. They highlighted the complexity created by the wide assortment of products traded; the large number of traders and processors involved and the combination of the formal and informal supply arrangements in operation. The findings were updated by FCSEP (1997) which undertook a nation-wide survey covering marketing, together with the other fisheries sector components of production, processing and consumption. Odongkara (1992) reports on marketing implications of the shift in fish production from the mainland beaches to the islands of Lake Victoria, which

lacked virtually all the infrastructure for marketing. SEDAWOG (1999a) report on a regional survey of fish marketing on Lake Victoria. The objectives of the study were: to identify and describe the people involved in the fish trade and processing industry; investigate the impact of the export market upon the domestic fish trade; examine the participation of women in the fish trade and examine the structure and organisation of the fish trade. LVEMP (2000a) reports on a workshop discussion on how to strengthen earnings in the fisheries and includes an analysis of the marketing constraints and a set of recommendations aimed at enhancing marketing for better earnings for the fisheries.

3.15 Projects in the Fisheries

Intervention measures to alleviate poverty have been developed at the sectoral as well as project level. Akroyd and Duncan (1998) explain that the sector approach is used to manage government's role in a sector as well as the aid to the sector. It involves putting in place a strategy that identifies the role of the state in relation to the private sector, both commercial and non-commercial. The sector approach was developed as an alternative approach to projects, in light of the shortcomings experienced with providing development assistance through projects alone. These included the difficulties for governments to manage the often large number of projects in a given sector; the danger of funding low priority activities and the failure of project benefits to be sustainable when fundamental problems existed within government and the broad policy environment.

At the project level, investments, policies, institutions and other actions are packaged for the purpose achieving a specific development objective within a defined time period. Baum and Tolbert (1985) describe the main stages of the project cycle, including the identification stage, when the project ideas are spotted and screened. This is followed by project preparation involving a feasibility study and detailed planning. Appraisal is the third stage, undertaken by external agencies to assess the overall soundness of the project and readiness for implementation. The fourth stage is implementation, when actual development or construction of the project is undertaken. The final stage is

evaluation on completion of project, to determine whether the project objectives have been achieved and to draw lessons from the experience with the project.

NORAD (1996) describes the Logical Project Framework, a tool developed for project planning. It summarises in a tabular presentation statements of the project goal, objectives, activities with their corresponding monitorable indicators and assumptions. Apart from providing clarity to the project plan, its use ensures that important aspects are considered in the project planning process.

Ackroyd (1992) explains the process approach to project design. On such projects, the design and intermediate objectives exist only in outline, with many details to be determined in the implementation phase. Project planning is flexible; projects are designed so that options are left open until the relevant time for decision is reached. Its main weakness is that it requires extensive planning and supervision by project staff, which may be expensive.

There is a growing literature on projects, which would be applicable to the fisheries of Lake Victoria. Palfreman and Insull (1994) provide the guidelines for carrying out a fisheries sector study. They view a sector study as a document which provides information about the industry, analyses it and assembles proposals for the industry's further development. They explain the role of the sector study in the planning process, the main components of the study, how it should be managed and the tools applied. Haywood (1982) provides insights into the use of models in investment planning in fisheries. The author is concerned with the development of the methodology, techniques, criteria and data that would assist with management of decision making in this field. Haywood and Palfreman (1998) explain the application of the project framework to fisheries planning. Lawson (1980) reviews aid projects in the field of fisheries. During (1987) discusses projects in fish processing. FAO (1999) reports on projects that have been implemented within Uganda's fisheries in the recent past.

3.16 Conclusion

Useful lessons can be drawn from the literature review for strengthening poverty alleviation interventions in Uganda's fisheries. The review examined the post-

Second World War development policies and strategies, identifying their strengths and weaknesses. Beginning with the development theory, through to structural adjustment, growth has been recognised as an essential pre-condition for poverty reduction within the strategies. The emphasis on resources, technology and market are relevant to growth within the fisheries and would guide initiatives aimed at creating opportunities for the poor. The review went further to discuss the accompanying requirements recommended for both poverty reduction and minimising inequality. They include improving the policy environment, strengthening the asset base of the poor, investing in social services and human capital; strengthening institutions for development, providing good governance and involving the poor in development programmes aimed at improving their well-being. A wide range of policy instruments is, therefore, provided that fisheries could take advantage of. From the research point of view, the findings enrich ideas for analysing and assessing policies. That process begins on this study, where issues of resources, institutional environment, economic factors and technology are studied. Subsequent studies could build upon it and extend the research to cover remaining aspects.

The literature on sustainable development provides relevant concepts and models for management of the fisheries resources. The sustainable development models presented provide a framework for explaining the relationships within the fisheries and contributing to a better understanding of its functioning. Subsequent models reviewed on the subject could guide proposed interventions in the area. The model by Drummond and Symes (1997) on unsustainable tendencies advises that fisheries regulations need to target the causes rather than symptoms of the resource decline. The presentation of Sen and Nielsen (1996) on levels of state and user-group involvement in management provides a theoretical tool for choice of system for Lake Victoria. The criteria for co-management success suggested by Ostrom (1990) and Pinkerton (1989) provide guidance on the requirements to put in place in the process of establishing a co-management regime on Lake Victoria. Finally, the conditions for good relationships within members of the fisheries users-groups are suggested by WPTPA (1997). These findings from the literature review are particularly relevant for Lake Victoria

fisheries in view of the of the on-going fisheries management plan formulation exercise for the lake.

The review examined development of the concept of poverty, from the Booth and Rowntree's narrow concerns of subsistence to the World Bank's (2001c) broad picture of the 21st century, where it is defined to include consumption deprivation as well as lack of achievement in education and health; sense of insecurity and exposure to risk. This broad definition enables the different facets of poverty on Lake Victoria to be identified, for effective targeting. Once the poverty is adequately identified, it would have to be measured and its causes established in order to formulate appropriate interventions for its alleviation. The literature reveals a range of indicators suitable for the different elements of poverty as well as methodologies developed to measure the different dimensions of poverty. Fisheries planners can take advantage of this knowledge to select the indicators and measurement methodologies relevant and suitable for their situation, depending on such factors as availability of data. The review also provides indications of the types of skill required for poverty analysis and planning in fisheries. The literature on causes of poverty would facilitate the diagnostic studies for poverty in the fisheries and assist in assessing poverty alleviation programmes. The documents on policies and programs for poverty alleviation in Uganda are particularly useful because they provide the framework within which fisheries would operate. It is necessary to evaluate these policies and programmes for their relevance and effectiveness. Ultimately, poverty interventions in fisheries would take the forms of sector or programme approaches and projects. The literature review on these concepts and application is useful information for planning similar interventions for Lake Victoria.

From the point of view of research, the literature review has shown the limited coverage of fisheries within the literature on poverty and demonstrated the justification for greater research in the area. Knowledge on general poverty and development issues would strengthen the conceptual framework for analysis of poverty in fisheries. Different methodologies are made available, which can be adopted and applied to research on Lake Victoria. Lessons can be taken from other cases in formulating appropriate measures of intervention. Such literature review would also facilitate comparisons with other poverty areas.

CHAPTER FOUR

RESEARCH METHODOLOGIES AND ACTIVITIES

4.1 Introduction

This chapter describes the methodology used in carrying out the research. It is intended to present the conceptual framework within which the research was formulated, drawing on a selection of relevant existing poverty models. It explains the key concepts used in the poverty analysis and how they were translated into measurable variables upon which the research was designed. Selection of the three research methodologies used in the study is reported, namely secondary data search, sample survey and key informant interviews. The relevance of each instrument for collecting the different types of data is explained. Each method is discussed, reporting how it was implemented during the study and its limitations. The methods of data analysis and presentation are then explained. The chapter provides the background within which the data presented in this thesis should be taken. The development of the research methodologies applied in this study was influenced by the findings of the literature review, as reported on in Chapter Three.

4.2 Literature Search

The first method of collecting information under the study was by carrying out a comprehensive literature review. This was done early in the study at the project identification and preparation stages and maintained throughout the research stages. The aim was to establish the knowledge base on the subject of economic growth, poverty alleviation and sustainable development. Findings from the literature review were then fed back into the formulation process of the study, strengthening development of the conceptual framework and the methodologies for the research. Sources of information included books, which were reviewed for basic principles in order to establish a firm theoretical foundation for the study. These were supplemented with journal articles, which presented supportive or critical viewpoints on these theories, based on the authors' research within different situations and at different times, often with some authors

offering explanations with models of their own. Official publications of the Government of Uganda and of aid agencies were also reviewed, notably of the World Bank, UN, EU, DFID, USAID, DANIDA and GTZ to obtain an understanding of policies and strategies towards poverty from the perspectives of Government and of the donors. These publications were also used to obtain information on the implementation of the poverty programs in the country and on the changes in the situation on the ground.

The literature search began by examining world development in the post Second World War period and the concerns for poverty within the newly emerging nation-states and early strategies put forward to deal with it. The concept of sustainable development was reviewed, examining what it would mean for Uganda's Lake Victoria fisheries. Early thinking was that a two-way causation link existed between poverty and environmental degradation, forming the basis for policy. However, recent studies have considered this an over-simplification of the reality and suggested relevant modifications (Lélé 1991). Strategies to attain sustainability were examined, including the options for effective resource management and the necessary conditions for the strategies. The concept of poverty was reviewed, recognising the complexity of its nature. The review then analysed recent trends in world poverty and the performance of the different regions, noting that sub-Saharan Africa had performed least in poverty alleviation during the 1990s. It examined the indicators of poverty as well as the methods of measuring poverty. This was followed by identification of the main causes and a review of the strategies for poverty alleviation, including an introduction to projects. The later part of the review focused on the specific Ugandan poverty situation and the fisheries.

4.3 Conceptual Framework

In this research, the problem of poverty and wealth distribution within the fishing communities is seen in the context of both the entire fisheries sector as well as the specific aquatic resource systems within which it occurs because of the influences involved. An important concept here is that of externalities, being consequences of actions by individuals on themselves and on others.

Externalities are said to occur “when one agent’s economic decision impinges on another economic agent directly” (Binger and Hoffman 1988 p.102). There is distinction between real and pecuniary externalities. Johnston (1992) explains the distinction, noting that real externalities affect the production or consumption levels of other agents or consumers, while pecuniary externalities affect market prices of output or costs of factors by affecting the market. Distinction is also made between positive and negative externalities, where the former generate benefits while the latter result in costs to other users. In fisheries, intra-industry and inter-industry externalities are often experienced. Examples in the former include reduction in fish stock to a fisher as a result of harvesting by other fishers; use of under-sized mesh gear that may affect the growth and reproduction rates of the fish for others and increase in number of boats on a fishing ground that may reduce the efficiency and increase the operating costs of individual boats, referred to as crowding externalities. Internally, therefore, positive linkages within the fisheries sector could generate jobs, market and incomes for the poor, while the negative externalities could deprive the poor of access to resources, among other concerns.

Inter-industry externalities could occur between fisheries and other industries. FAO (1998) explains that the fishing industry could affect other sectors through pollution, examples of which include water pollution from fishing vessels and air pollution from fish smoking, fishing vessels and processing plants. Wastes generated by fish landing sites also create substantial pollution and discourage tourism and bathing uses of the beaches. A fishery should, therefore, not be seen in isolation but as one of several activities taking place within an aquatic resource system, with influences on each other. Other such activities include fish farming, transportation, water supply, harvesting of aquatic plants, sand mining and recreation. In this respect the fishing industry could make a positive contribution to the wider objectives of coastal area management. Fishing activities, encompassing fishing boats, landing sites and fish markets, can also contribute to shaping the landscape, giving it attributes that are attractive to many people, both those living permanently in the area and tourists. In addition, the relative dispersion of the activity within artisanal fishing may contribute to

maintaining viable rural communities and checking the growth of lake-side urbanisation.

A concept which brings together the co-ordination and management of all these activities based on the resource is the Aquatic Resource Management Plan (ARMP). An ARMP is developed for a resource and environmental entity with boundaries set to allow effective management and protection, so there is need to include a full extent of the area influenced by the different activities in the ARMP. It recognises the often great degree of interdependence between activities within an environment and provides a methodology for achieving objectives that are relevant to effective resource use, its management and its protection. It is essentially a descriptive methodology that allows consideration of wider issues than just those related to one activity in assessing its likely effects on the environment and other activities. It assists in resolving conflicts over resource use through aggregating the relevant aspects of the area into a multifunctional and multi-use plan. Technical and policy issues sometimes limit the effectiveness of an ARMP and, therefore, need to be resolved. The ARMP approach recognises and accommodates indirect as well as the direct effects of activities. It should also be aware of ecological and social changes and be able to accommodate them. It should allow the consequences of particular actions to be seen, both for the environment and the resource, so that they can be addressed. ARMPs are descriptive tools that provide proper context, aid priority setting and facilitate implementation of policy and legislation through the project cycle. The methodology should enable the needs and aspirations of all water users to be accommodated where possible and facilitate effective planning of development of an environmental resource. It is also useful in assessing whether the activities meet the set objectives.

The main stages in developing the ARMP approach are that first, work programmes and strategies for implementing them are developed, using the project management approach. Secondly, knowledge of the technical and policy background to conflicts of multiple use of resources is provided. Thirdly, a basic descriptive plan for comparison of status with objectives and for consultation is developed. Lastly, an action plan with projects and targets is developed. Details

of the methodological steps for developing an ARMP is given in the Hull University lecture notes by Keith Haywood.

Within an ARMP, there could be externalities similar to those between sectors, which need to be considered for their impacts on poverty among fishing communities. Opportunities for supplementary or alternative employment to fishing would be one positive consideration to explore. At the same time, increasing demand for aquatic resources by a diverse array of user groups could result in negative externalities including environmental degradation and loss of habitat which would damage the resource on which the poor fishers depend for their livelihood. It may also lead to conflict between various stakeholder groups.

The research depicts the Lake Victoria fish commodity systems as illustrated in the flow diagram in Figure 4.1 below. The diagram is intended to identify the different channels of fish flow from producers to consumers, with the various boxes representing functionally the main activity and/or resource centres along each channel. The model would be used in the poverty study to identify the points where the different poverty factors operate within the fish systems. This would facilitate effective targeting by policy and other forms of interventions under a poverty alleviation program.

Moving down from the top, the model recognises that there are non-participants in the sector, consisting of people who do not in any way benefit from the fishery. These would include non-owners of fishing equipment, people involved in activities that do not directly or indirectly service the fishery and the unemployed. In this category, there would, in fact be those who suffer as a result of negative externalities from the fishery. An example of such externalities would be the high costs of food items at the landing sites resulting from the large numbers of fishers as well as the pecuniary externalities from the large daily cash transactions involving fish. Related to this group are other non-participants in the fishery but people who derive some external benefits from activities within the sector, due to some tenuous links to the fishery. These may be members of fishery households or relatives.

A small but significant group on Lake Victoria are the subsistence fishers. Although traditionally they were the most common group on the lake, the

number reduced as more people took to fishing for income. These are among the poor people in the fisheries, utilising low levels and sometimes simple gear, such as traps, baskets and hand hooks. Their operations are often not boat-based. The capital requirements are negligible and much of the work depends on labour. Women play great role in this fishery. *O. niloticus*, *Clarias* and *Protopterus* are the species commonly targeted. The activities take place mainly in shallow waters and bays, often regarded as possible breeding and nursery grounds for fish. As a result breeding fish and juveniles form greater parts of their catch.

A major fish commodity system consists of the channel that exports outputs of industrial processing to the international markets. It deals mainly in chilled *L. niloticus* fillets but *O. niloticus* is also increasingly being absorbed into this system, as well as some of the by-products of filleting, notably fish swim bladders. The industrial processing in Uganda is about ten years old. It has been taking advantage of the demand for white fish, especially within the European Union countries and has been able to put up enough capacity to fully utilise its officially allocated quota of 60,000 tonnes of fish raw material per annum. Having suffered frequent bans on their products on the EU market, the factories have undertaken the necessary investments and now fully comply with EU and US Hazard Analysis Critical Control Point (HACCP) procedures. Regular fish quality tests have been carried out in approved laboratories in Europe, under a EU sanctioned testing program. Flake ice capacity and cold storage facilities are available at all stages of production and the latter have also been provided at Entebbe Airport, the departure point for air-freighted fish. At the peak of industrial processing, there were fourteen factories operating but by the beginning of 2001, only eight were functioning. As they were still recovering from the latest and longest ban of 1999-2000, most of them operated only one shift a day and were reported to be utilising about 60-65% of their installed capacity. The processors estimated that in 2001 they would be able to export some 23,000 tonnes, valued at about US \$64.0 million. Transportation of this fish is in two ways, namely air-freight to Europe, with one flight of chilled *L. niloticus* from Entebbe Airport each day. Frozen products are sent by road to Mombasa in Kenya, a journey lasting three days, then shipped to more remote destination.

The industry is supplied by artisanal fishers, operating gill nets and long lines using motorised as well as non-motorised bigger type of boats known as “ssese,” targeting offshore fishing grounds. Often the fish is collected from the numerous fishers by factory agents who deliver it to the processing plants. The capital requirements and investment for this category are said to be highest among all the categories within artisanal production and is beyond the reach of most fishers on the lake. Local capital and labour have been used in production, with the processors buying the catch after landing. However, due to increasing competition among the processors for supply of raw material, they have been extending boats, fishing gear and cash credit into the harvesting component of the industry as well, further displacing local operators. The main by-product of this industry are the fish frames, basically consisting of the heads and skeletons left after the fillets are extracted. This finds its way into the domestic market, where it is sold wet or after further processing by smoking, frying or sun-drying. Limited quantities of the fillets can also be seen in supermarkets in Kampala, for the consumption of the rich residents. The industrial processing also offers jobs to technical and skilled manpower as a contribution to the local economy.

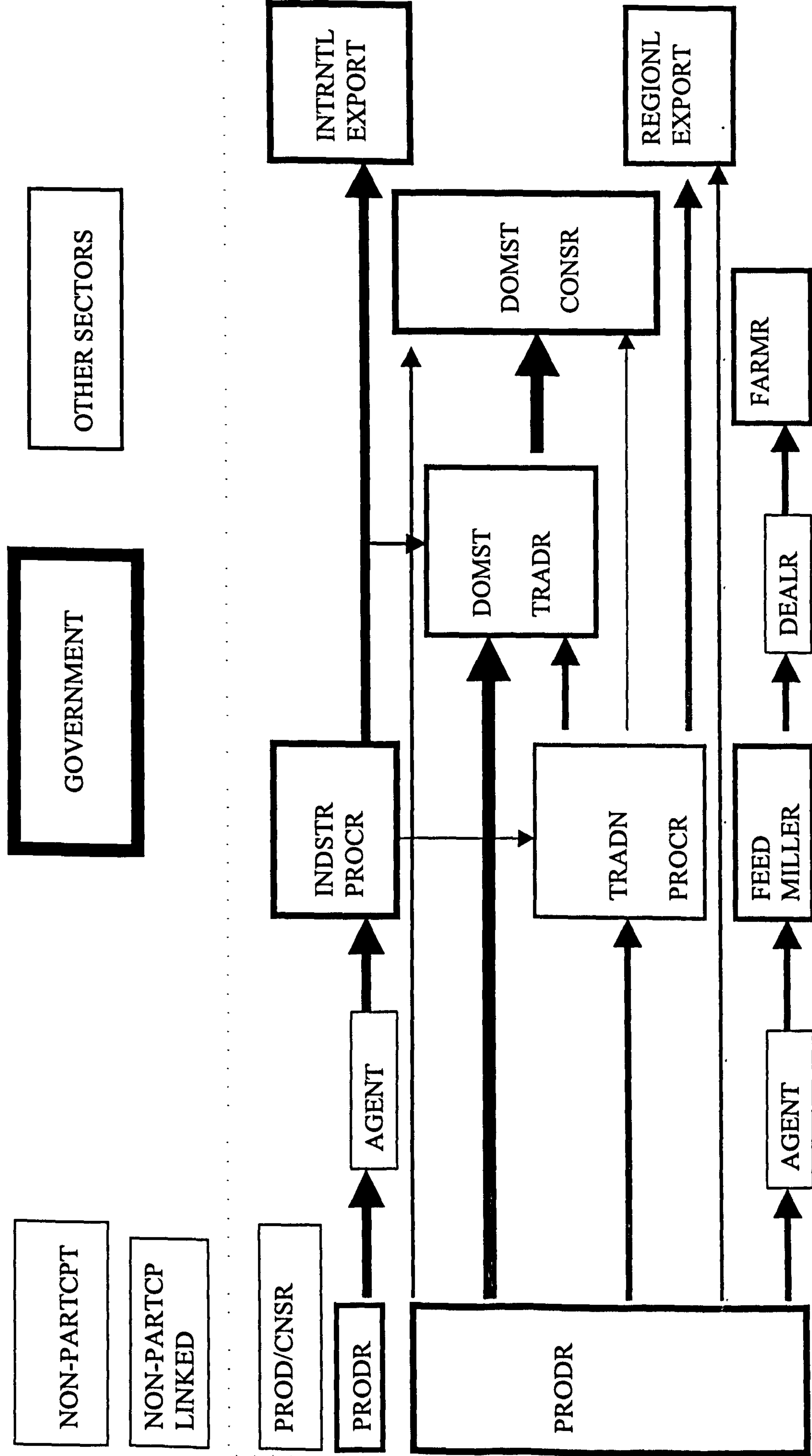
The domestic market fish commodity system is the biggest, in terms of the number of units involved and output absorbed. Out of a total of 15,544 fishing boats recorded by the frame survey of 2000, the majority are producing for the domestic market (LVEMP 2001). Because of the isolation of many of the fish landing sites, considerable traditional processing through smoking takes place within this system. The channel is also characterised by large quantities of juvenile fish landed, processed and traded. This is attributed to the low capital among the fishers, making them unable to afford the recommended types of gear. Furthermore, the high poverty among consumers on the domestic market means they can only afford small-sized fish. The situation is aggravated by the driving-up of fish prices by the industrial processors as they compete for supply. In addition, there is rampant use of illegal methods of fishing and in general, this system is confronted with serious fisheries management issues. However, there has been failure on the part of the state to implement the state-based management system put in place due to lack of resources and corruption among the officers. The local market, made up of small pockets of consumers scattered all over the

country, is supplied by numerous small traders who deliver the fish from producers or traditional processors by bicycles or trucks. The main species traded are *L. niloticus*, *O. niloticus* and *R. argentea* delivered fresh, smoked or sun-dried in the case of the latter. Poor road infrastructure, non-use of ice, high cost of transportation and low purchasing power among consumers have seriously constrained the domestic fish market. Some of the fish is exported to neighbouring countries, notably Kenya, the Democratic Republic of Congo and Rwanda, consisting mainly of smoked and sun-dried *O. niloticus*. Considerable catch is also landed directly in Kenya as a result of currency preferences among the fishers.

Another fish commodity system is that of fishmeal, involving the crushing of sun-dried *R. argentea* for use in poultry, animal and fish feeds. *R. argentea* is becoming Uganda's second most abundant commercial species after the *L. niloticus*, according to catch statistics (DFR 1999). As reported earlier, the industry competes with humans for the consumption of this second most important commercial species of the country, taking advantage of the low purchasing power of its consumers and the lack of efficient processing techniques for the species for human consumption. Specialised fishing units harvest the fish, using the "lampara" net, designed specifically for scooping the fish after it has been attracted to a point in large concentration by light using pressure lamps. Agents bulk supplies of the dried fish from numerous small fishers, processors or traders and deliver to the feed mills. A few millers also buy direct, especially from the large fishers like those based at Lambu Landing Site in Masaka District. The product is supplied to farmers through appropriate agents and retailers. Apart from the nutrition concerns associated with diverting this resource from the local poor to the production of poultry, animal and fish feeds, development in this fish commodity channel has provided a more lucrative and stable market to the fishers concerned and enhanced their earnings. It has also saved the nation foreign exchange hitherto spent on importing protein-rich feeds.

As depicted in the flow diagram, the state and the other sectors which would form parts of an ARMP are clearly recognised in the model. The interactions and effects of these are considered in the analysis.

Figure 4.1: Fish Commodity Systems Flow Diagram, from Producers to Consumers

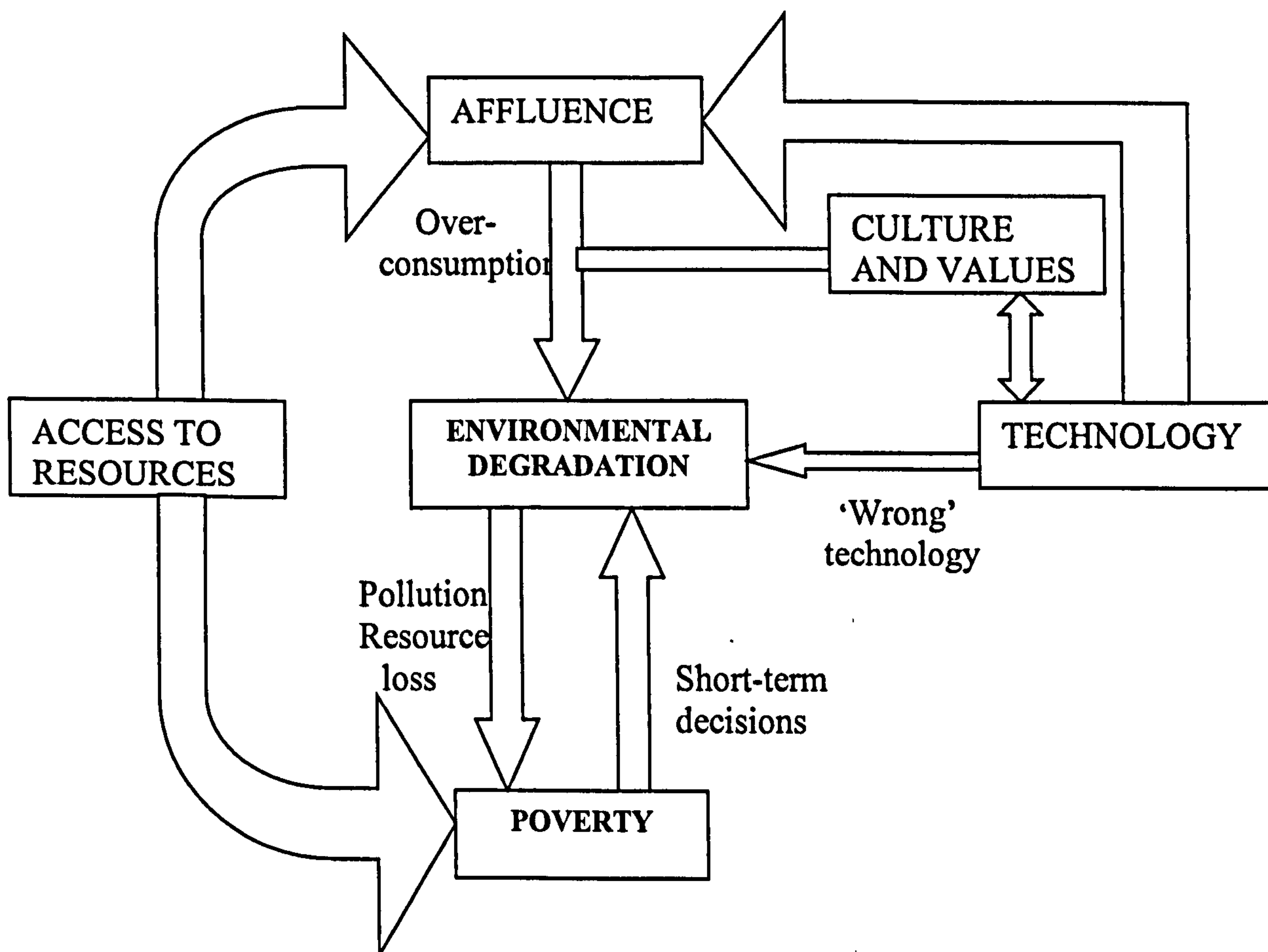


In developing a conceptual framework for the analysis of poverty on this research, reference was made to two models already introduced in the literature review, namely the Lélé model and the World Bank model of poverty causation, seen to be of considerable relevance to the Lake Victoria fisheries poverty situation.

4.4 The Lélé Model

The model was proposed as a response to the author's dissatisfaction with the thinking within the mainstream Sustainable Development over the two-way link between poverty and environmental degradation. The model is an attempt to provide a 'more realistic presentation of the poverty-environmental degradation problem' (Lélé 1991 p. 614). A schematic representation of the model is given in Figure 4.2.

Figure 4.2: The Lélé Model of the Poverty-Environmental Degradation Problem



Source: (Lélé 1991).

The model depicts affluence as the main force driving the system to a poverty sink through environmental degradation. Affluence refers to the over-consumption primarily by the wealthy consumers in the developed countries but also by interests linked to exploitation of the resource, which leads to drawing of resources in excess of the needs. Affluence may also apply with respect to other related production systems, impacting on the fisheries resources through pollution. The model identifies access to resources as an important cause of poverty, both directly through lack of it, but also indirectly via affluence, thus re-enforcing its impact on poverty through environmental degradation.

Similarly, technology is seen as a possible cause of poverty through environmental degradation either directly or indirectly. The direct impact of technology on environmental degradation occurs when 'wrong' technology is applied in exploitation of the resource. In fisheries an example would be the use of destructive fishing gear or methods. Indirectly, effective production technologies would be deployed, driven by affluence and this would result in over-exploitation of the resource. The model recognises the role of culture in environmental degradation and ultimately poverty. This is primarily indirect, through the technologies adopted and by re-enforcing affluence. The model contains two key cycles, namely the poverty sink from affluence to poverty through environmental degradation and back and the cycle of linkages from affluence, culture and technology. Interventions targeting either of these cycles could drive the systems in directions other than toward the poverty sink.

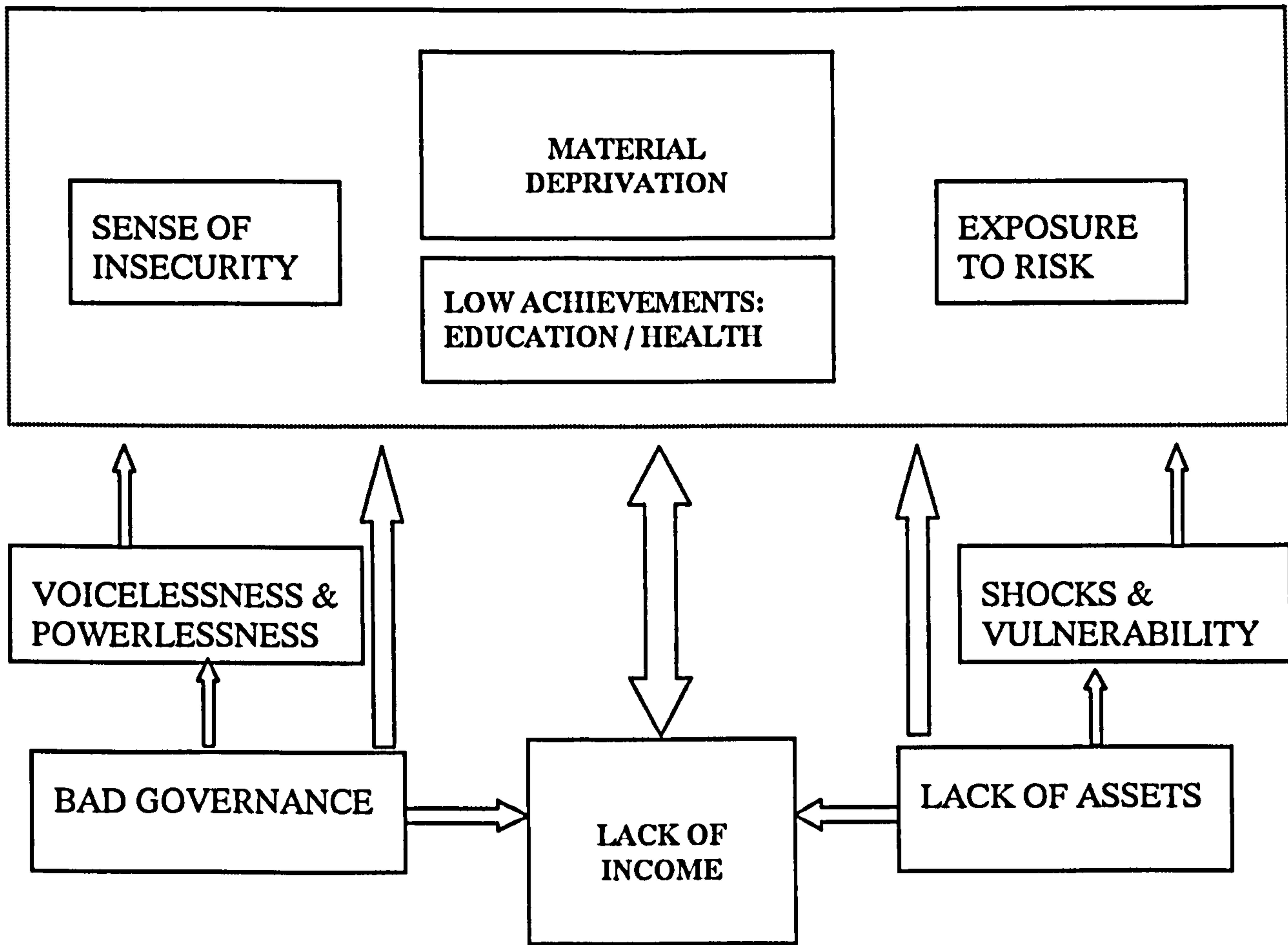
However, in the model, affluence presumably includes the market mechanism, both local and global, which would be relevant for the Lake Victoria fisheries but this does not come out clearly. Secondly, the role of finance or lack of it within the system is important in tackling poverty. Thirdly, the institutional framework, responsible for policies, governance and provision of services has strong bearings on poverty. This is also not well reflected in the model.

4.5 The World Bank Poverty Model

The World Bank is one institution that has been involved with world poverty for some time now. It's role came into prominence in the poverty arena in the

1980s, when the concept of 'debt crisis' among third World countries emerged as a new dimension in poverty causation. Since then, it has been involved in formulating policies for and funding poverty alleviation programs around the world. Over the years, the World Bank has gained experience with and broadened its understanding of the problem of poverty and has been able to come out with its definition of poverty and a summary of its causes into three categories (World Bank 2001). These causes have already been reviewed in Chapter Three above. The World Bank defines poverty to include four dimensions, namely material deprivation, low achievement in education and health, a sense of insecurity arising from a situation of voicelessness and powerlessness and exposure to risk as result of vulnerability to various types of shocks and inability of the poor to cope with them. With respect to the causes, the first identified is lack of income and assets to attain basic necessities of life, namely food, shelter, clothing, and acceptable levels of health and education. These may be human assets, such as the basic or skilled labour; natural assets like land; physical, financial or social assets such as networks of contacts and political influence. The second factor is a sense of voicelessness and powerlessness in the institutions of state. This arises as a result of absence of the rule of law, corruption and other forms of bad governance. It leads to a sense of insecurity in the poor and often prevents them from taking advantage of opportunities outside their immediate areas of security. Thirdly, poverty is caused as a result of the vulnerability to adverse shocks and inability to deal with them due to lack of coping mechanisms. A schematic representation of the World Bank ideas is given in Figure 4.3 below.

Figure 4.3: Schematic Representation of Poverty Causation, as Depicted by The World Bank



Source: Derived from (World Bank 2001c)

The strength of the model lies in its broad view of poverty, encompassing the different dimensions in which it often manifests itself. The model also brings out the institutional aspect strongly, emphasizing the need for provision of service, policies to enhance productivity, including participation in the market and the importance of good governance. However, important factors including natural resource, social and financial aspects are all put together under assets where the emphasis is not strong enough. Given their relevance to the Lake Victoria fisheries, they need to stand out and be adequately addressed.

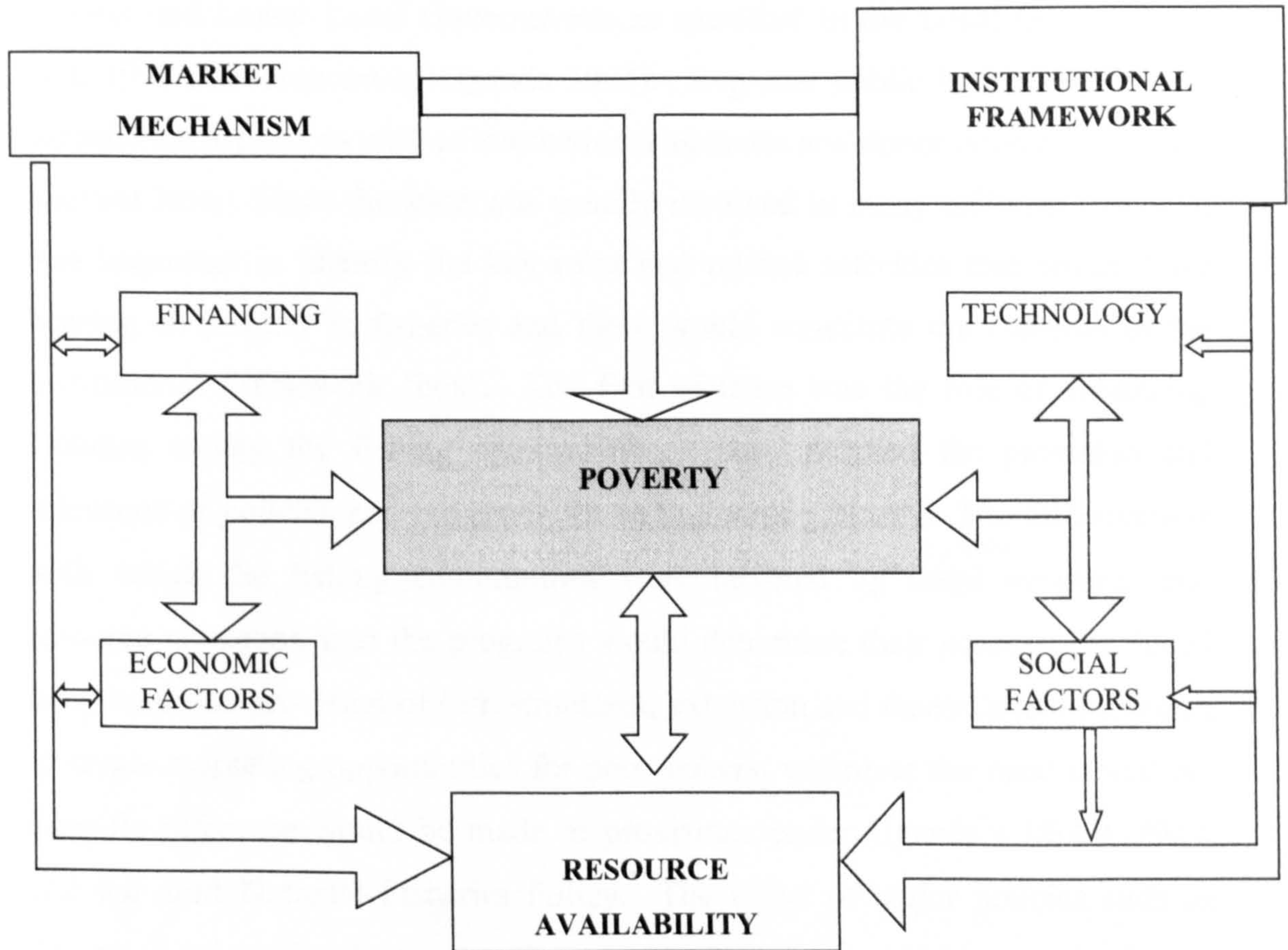
4.6 The Research Model

A model was, therefore, developed for the purpose of the research, building upon the Lélé and World Bank models, taking consideration of their limitations for relevance to the Lake Victoria fisheries. A major limitation to the process of developing a model of this kind is the lack of time-series data in developing countries. As explained later in this chapter, the research will rely considerably on 'snap shot' data generated from a survey. With that constraint, it is proposed to develop a descriptive model that shows relationships but no attempt is made to test these relationships in this thesis. The broad definition of poverty was adopted from the World Bank definition, including inadequate basic necessities, low education and health achievements, a sense of insecurity and exposure to risk, but bearing in mind the methodological limitations to deal with the last two (World Bank 2001c p. 19). It was proposed that poverty would be caused by a selection of key factors, namely the institutional framework, the market mechanism, social factors, inadequate or unsuitable technology, financial constraints, economic factors and resource availability and access. A simple representation of the relationships is given in Figure 4.4 below. The model is based on the premise that within the different channels and between the boxes or resource centres as earlier depicted in Figure 4.1, there would be flows of fish, cash, jobs, influences and other forms of linkages and externalities, presenting opportunities for enhancement of the well-being of the people concerned. However, constraints arising from any of the key factors identified above would hinder the realisation of gains by the relevant communities, driving the system into the poverty sink. The model proposed here does not only give greater roles for social factors and technology but introduces additional factors that are considered important to poverty analysis in the Lake Victoria fisheries situation.

Application of this model for the research assumes that poverty exists within the fishing communities. The first part of the research will, therefore, establish the presence of poverty among fishing communities and its distribution within the different groups and regions. The definitions of poverty reviewed above will be applied, to which the data and available information will be related. This will meet the research hypothesis and objectives related to the presence and distribution of poverty. The model will, then be applied as an approach for

identifying the factors causing the poverty and for formulating recommendations for its alleviation. It is considered adequate in reflecting that part of the hypothesis meeting the related objective.

Figure 4.4. Poverty Factors in the Fisheries of Lake Victoria, Uganda



In the model, the boxes are targets for research. The poverty box had earlier been defined to cover inadequate basic needs, low education and poor health. These have been studied to understand what they meant from the perspective of the fishers of Lake Victoria. The research was able to build on this definition with other important dimension of poverty, relating to the specific situation of the Lake Victoria fisheries. This has been important both in assessing previous policies on fisheries and also in formulating appropriate recommendations targeting poverty. The remaining boxes in the model represent factors that were considered responsible for poverty and were investigated for their roles in the poverty situations in the fisheries on Lake Victoria.

The institutional framework box referred broadly to the roles and responsibilities of Government within poverty alleviation in the fisheries. Ordinarily, Government was expected to provide an enabling environment and some degree of direct support that would get the poor out of poverty. Failure on the part of Government to accomplish these would, therefore, result in deepening poverty. Different levels of Government would be included here, namely the Central, the District and Lower Local Governments as specified in the Local Governments Act, 1997 (Government of Uganda 1997). Regional public bodies responsible for relevant aspects as well as international agencies and donor countries are also relevant here. Since the state was usually involved in many different things, it was important to identify the key roles and related activities that would have bearing on poverty in fisheries and these would constitute the contents of the Institutional Framework 'box'. The first of these was the role of enhancing incomes among the fishing communities. This included the provision and relevance of policies and programs for strengthening income. The effectiveness with which the fishing communities were targeted by these measures and resource allocation into the programs would determine their success. Included here would be provision of infrastructures, extension and research and measures to create marketing opportunities for poor fishers, wherever the need would be. Specific reference would be made to provisions under Uganda's PEAP, PMA and the draft National Fisheries Policy. The effect of major policies such as decentralisation aimed at improving service delivery would be examined with respect to the fishing communities. All that would compare well with the provisions on the World Bank model under the "actions to strengthen the purchasing power of the poor" (World Bank 2001c). The second role was the management of the fisheries resources for sustainable utilisation. This would minimise fisheries resource degradation which could lead to poverty among the fishing communities, a point well presented in the Lélé model. The fisheries management in place would be evaluated for its effectiveness and impact. The constraints would be analysed and the proposed measures by Government to improve on it examined. The relevance of these measures to the resource situation, the participation of the different stakeholders and their roles and the related resource aspects required for its implementation examined. In particular, the roles of the different levels of Local Government would be investigated. The

third role was provision of key social services, namely education and health to the fishing communities. This would contribute directly to addressing important dimensions of poverty, namely inadequate education and poor health. It would also result in improving the productivity of members of the communities for greater incomes. This was because better education improved the capability of an individual and broadened his/her chances of obtaining a better-paid job outside the fishery. Similarly, a healthy person would be more productive than an unhealthy one. Again, here the provisions under PEAP and PMA would be evaluated for their relevance for the fishing communities. The implementation of the specific education and health provisions for these communities would be assessed.

The next factor identified was the market mechanism, which referred to the impact of market forces in causing poverty among local communities of fisheries resource users on Lake Victoria. Distinction would be made between the international and domestic market mechanisms. The international market mechanism would encompass such aspects as globalisation and affluence, drawing from the Lélé model. On the positive side, globalisation would lead to poverty reduction by stimulating growth through making available resources for investment and improved technology in the sector. It would offer higher prices paid to the local producers as well as providing jobs directly within the investments established. The research would establish if this had, in fact been achieved on Lake Victoria. However, on the negative side, five ways have been identified through which the international market mechanisms could cause poverty. First, this would be by disconnecting the poor from the resource. High earnings associated with the international markets would attract greater competition into the resource exploitation. Unable to stand the competition against stronger competitors, the poor would drop out and lose access to the resource. This was often re-enforced by the demands of the international markets, which determined the kind of technology to use and the level of skills required. Since these were high and usually beyond the reach of the poor, they would effectively limit their participation in the industry. Secondly, the international market mechanisms would disconnect the poor from consumption of the resource products. As explained earlier, export of *L. niloticus* had led to

high prices offered for the fish, which were beyond the reach of local consumers. This could lower the nutritional and consequently the health status of the local people, a dimension of poverty. A third and related impact would be on the resource. Again, it has been explained that due to high prices of *L. niloticus* resulting from export of the fish, demand among local consumers had shifted to the juvenile fish. The growing exploitation of immature fish was a threat to resource sustainability that would lead to further poverty as clearly elaborated in the Lélé model. Fourthly, the international market was driven by affluence, characterised by over-consumption in the developed world. This would lead to fisheries resource degradation on Lake Victoria, due to the tendency for excessive extraction of the resource to meet the desires of the affluent. According to the Lélé model, this would drive the system towards a poverty sink. A fifth and equally important concern would be with the risks and vulnerability of the local communities in the face of the frequent shocks from the export markets that destabilised their earnings. Fish 'ban' is a recent but now very familiar word to the fishers on Lake Victoria and its impact in destabilising fish prices and fishery activities are important. On the domestic market, the market mechanism was important in ensuring that producers were able to translate their catches into benefits and consumers were able to obtain fish on a regular and affordable basis. Failures in the market mechanisms would hinder these objectives from being achieved, resulting in income poverty for the fishers and health poverty for the consumers. The research would examine operations of these mechanisms and identify causes of any failures and how they could be addressed through project interventions.

Within the fishing communities, a variety of social aspects could affect the well-being of the individuals and the development of the groups and were, therefore, considered possible causes of poverty. The composition, organisation and functioning of fishing communities provided the necessary set-up for development of the communities and weaknesses therein would result in poverty within the groups. The leadership structures, decision-making processes and information systems would be essential elements for implementing development policies and programs at the local level. The demographic characteristics of the communities would affect their consumption vis-à-vis production. Cultural

views, knowledge base, attitudes to fisheries and other activities, perception of the future and gender roles were important both in enhancing productivity among the fishers and in fighting fisheries resource degradation. The Lélé model is explicit on cultural influences in driving the system towards the poverty sink, via environmental degradation. The World Bank model also made mention of the social asset. Existence and strength of local institutions and participation of the different groups could strengthen their involvement in management of the fisheries resources. Government policies and programs for social development would be reviewed and assessed for their relevance to fishing communities. Options for enhancing the social development of fishing communities to make them more responsive to the needs of poverty eradication would be explored. The role of projects in achieving this would be identified.

The model identified technology as another factor, with special reference to its availability and suitability both for sustainability of the resource and for the productivity of the poor. These would include technology in harvesting, processing and transportation of fish. Inadequate technologies would result in poverty as it would limit the productivity of the fishers. The use of costly and inefficient technology would also lead to poverty, as the profit margins would be reduced. An example of costly technology is the use of motorised canoes in some of the less lucrative fisheries on Lake Victoria. Associated with cost is the level of sophistication of the technology. The adoption rate among local communities for sophisticated technologies is low. Furthermore, they could easily lead to poverty because once they experience break-down, the expertise and facilities to service them would not be available and they would often remain out of use for long periods, with bad income consequences for the users. Another dimension of the technology factor was that of 'wrong' technology as depicted in the Lélé model. Undersized-mesh gear, non-selective gear, methods that forcefully drove fish into the nets and use of poison for fishing were some of the common wrong gear on Lake Victoria. These would result in fisheries resource degradation, driving the system towards poverty. Similar examples would be identified in fish processing and transportation. The technology policies would be reviewed and their implementation assessed. The role of research in

developing technologies would be examined. Projects aimed at promoting technology within the fishing communities would be studied.

Financing as a poverty factor referred to resources for the use of the private sector for productive activities. The need for financial asset was raised in the World Bank model. These funds, taken out in the forms of credit under various arrangements, would enable the fishers to expand on existing productive activities, start a new one or diversify into an alternative thus moving out of poverty, which they would, otherwise, not have been able to do. Lack of such funds would have the impact of perpetuating poverty among the fishers. Existing credit schemes would be identified. Access to them by fishers would be evaluated. The terms of these credits and their suitability for fishery operations would be analysed, notably issues of collateral and high transactions costs for the poor. Limitations within the fisheries that reduced the attractiveness of these activities to the funders, notably the high rate of migration by fishers and the rampant theft of gear would be examined. Financing could also be generated internally by the fishers themselves, through savings. The viability of fish work and the capacity and constraints to accumulating wealth and generating internal savings would be studied. The role of Government would be studied, notably the provisions within PEAP, PMA and the draft National Fisheries Policy for strengthening private sector development among fishing communities would be reviewed, with special note of the financing aspect. Options for project intervention to strengthen financing for fishers would be explored.

The economic factor was considered another possible cause of poverty. This referred to the factors that determined the viability of the fishery operations. The assumption was that if the activities did not generate returns over and above their costs, they would deepen the fishers' poverty rather than help them out of it. Clearly the economic factor would be influenced by a number of other factors in the model. Wealth accumulation, distribution of costs and benefits, savings rates, access to credit and role of middlemen would determine availability of capital for the productive activities. Entrepreneurship, skills and perception of the future were important attributes that would strengthen productive capacity of the fishers. The local economy as a whole would be important for the viability of fishery operations, through provision of markets, alternative sources of income,

facilities and utilities and other useful externalities. Economic factor would also address such important considerations as the barriers to entry and exit and survival strategies. The factor relates well with the World Bank model, which proposes measures to expand poor people's assets and tackling inequality (World Bank 2001c). Among the important links of this factor box with the other boxes would be that with the Institutional Framework, where Government's strategies to address vulnerability among fishers would be reviewed and options for intervention examined.

The last factor would be resource availability. The relationship with poverty is elaborated in the Lélé model, where it is through resource degradation that the various factors would drive the system to poverty. Depletion in fish stocks would deny the poor the source of their livelihood. Furthermore, the poor were known to survive on certain species. Depletion of these species would drive the poor into further poverty even if overall, the fishing industry was growing. The research would review the different types of threats to the ecological sustainability of the fisheries of Lake Victoria. The factors responsible for these threats would be examined. The policies, programs and projects to address the threats would be reviewed and options for further action would be considered.

The model would provide analytical framework for studying the poverty situations within the boxes and identifying the causes of the poverty. The analysis would also evaluate the measures already in place to address the different poverty factors, including policies, programs and projects. Finally, it would provide insights into the options for any further poverty alleviation interventions.

4.7 Selection of Research Variables

The research model had so far been described in terms of the various concepts. However, in order to arrive at a practical research proposal, these concepts had to be translated into measurable variables that best represented them and this was the rationale for selecting the variables that were used in the surveys. A summary of the selection of variables is given in Table 4.1.

Table 4.1: Research Concepts and the Relevant Variables:

Concepts	Relevant Variables
Nature of poverty	Per capita income Per capita consumption Level of education Infant mortality Life expectancy
Institutional framework	Institutions and policies Legislation and regulations Programs and projects Infrastructures & facilities Extension and research Social services
Market mechanism	Processing capacity Fish exports Fish prices Employment Competition Ownership and access to the resource
Social factors	Size of fishing communities Ethnic composition Leadership structure Decision making mechanisms Information dissemination Demographic factors Cultures and beliefs Gender roles Ownership of productive assets Skills and knowledge Local institutions and involvement Conflict management
Technology	Production, processing and marketing equipment Extension

Concepts	Relevant Variables
	Access and adoption of new technology Research and development
Financing	Investments and capital Wealth accumulation and savings Access to credit
Economic factors	Entrepreneurship Distribution of costs and benefits Role of middlemen Barriers to entry and exit Risks and uncertainties Perception of the future Linkage and externalities Alternative employment
Resource availability	Fish catches Fish stocks Species composition Juvenile catches Fisheries management
Fisheries policies	Issues Goals Policies Institutional framework Resources Participation of fishers Targets and expected impacts Achievements and constraints

The different types of data were collected using appropriate data collection instruments. The instruments deployed were secondary data search, field sample survey and key informant interviews. The existing data were evaluated and the different types of data were examined to determine which instruments would be most appropriate for collecting them. The choices of the data instruments are as summarised in Table 4.2 below:

Table 4.2 Choice of Research Instruments:

Objective Areas	Secondary Data Search	Survey	Key Informant Interviews
The nature of poverty	Per capita incomes Per capita consumption Levels of education Primary school enrolment Infant mortality Life expectancy Fish production statistics	Average catches and earnings Access to education services Access to health services Main fishery activities District of respondents	School enrolment Educational facilities Health facilities
The institutional framework	Institutions and policies Legislation and regulations Programs and projects Infrastructures & facilities Extension and research Social services	Awareness of policies and programs Attitudes towards laws and legislation Participation in programs and projects Utilisation of infrastructure and facilities Access to extension and research services	Institutions and policies in place Local implementation of legislation and regulations Implementation of development programs and policies Infrastructure and services availability Local resource management, extension and research activities Provision of social services

Objective Areas	Secondary Data Search	Survey	Key Informant Interviews
The market mechanism	Processing capacity Fish exports Fish prices Employment	Access to social services Ownership and access to the resource Strategies for competition for resource	Fish prices Competition Job opportunities Unemployment.
Social factors		Ethnic group Cultures and beliefs Gender roles Ownership of productive assets Skills and knowledge Perception to fisheries	Size of fishing communities Ethnic composition Leadership structure Decision making mechanisms Information dissemination Demographic factors Local institutions and participation Conflict management
Technology	Production, processing and marketing equipment Research and development New technologies available	Types of equipment used Awareness of research Access and adoption of new technology	Different types of technology locally in use

Objective Areas	Secondary Data Search	Survey	Key Informant Interviews
Financing	Credit policies and programs	Investments and capital Viability Wealth accumulation and savings Access to credit	Credit institutions Credit availability Operations of credit
Economic aspects		Entrepreneurship Distribution of costs and benefits Role of middlemen Barriers to entry and exit Risks and uncertainties Perception of the future Linkage and externalities Alternative employment Survival strategies	Local economy, Wealth criteria, Role of middlemen, Linkages and externalities.
Resource availability	Fisheries management Fish stocks	Juvenile catches Fisheries management Constraints to fishing	Fish catches Juvenile catches Fisheries management Species composition

Objective Areas	Secondary Data Search	Survey	Key Informant Interviews
<p>Fisheries policies.</p>	<p>Policy issues Goals Institutional framework for implementation Resources Targets and expected impacts Linkages and externalities Achievements and constraints</p>	<p>Awareness of policies Attitude to policies Participation with policies Impact of policies</p>	<p>Local implementation of policies</p>

4.8 Secondary Data Search

The search for published data was carried out with respect to the selected variables as given in Table 4.2 above. The main official sources of secondary data and information identified included publications of Uganda Government ministries, departments and projects, country reports and policy documents of international development agencies and bilateral donor countries. Table 4.3 summarises the main documents used as sources of secondary data.

Table 4.3 Sources of Secondary Data:

Institution	Data Document
Ministry of Finance, Planning and Economic Development	Background to the Budget, 198/99; 1999/2000; 2000/1. Annual Statistical Abstract 1998 – 2000. Census of Population and Housing, 1991. Integrated Household Surveys, 1992-93 – 1999/00. Reports of the Uganda Participatory Poverty Appraisal Process (MFPED 2000c, 2000d). Web sites: http://www.ubos.org/ http://www.finance.go.ug/ http://www.uppap.org/
Department for Fisheries Resources	Annual Reports (1994, 1998, 1999). The National Fisheries Policy, 2000. (draft) Web site: http://www.fishery.org/
Ministry of Agriculture, Animal Industry and Fisheries	Plan for the Modernisation of Agriculture, 2000. Report of the Fisheries Master Plan Study, 1999. http://www.agriculture.go.ug/
Ministry of Health	Report of Integrated Health Survey, 1996.
National Environment Management Authority	State of the Environment Report, 1997. Web site.: http://www.uganda.co.ug/nema/
Fisheries Resources Research Institute	Annual Reports. Workshop papers. Publications.

United Nations Development Programme	Human Resource Development Report , 1998 – 2000. Web site: http://www.undp.org/
Food and Agricultural Organisation	Country reports. Publications Web site: http://www.fao.org/
World Bank	World Development Report, (1980, 1990-2001). Poverty Monitoring Reports Web site: http://www.worldbank.org/povertynet@forumone.com
UK Department for International Development	White Paper on International Development (first and second), 1997, 2001. Working documents. Workshop report. Web site: http://www.dfid.gov.uk/

Information was also obtained from other publications during the course of the research. These are indicated in the relevant references wherever they are reported.

4.9 Field Data Surveys

The field data collection was carried out at two levels, namely at the community level and the activity unit level. Both quantitative and qualitative data types were collected. Key informant interviews were carried out to collect data at the community level. It also served to guide the sample survey designed for the detailed data collection at the activity unit level. Data from both instruments were used in the thesis.

The population for the field data collection consisted of fishery unit operators, namely the producers, processors and traders, on the Ugandan portion of Lake Victoria. As the survey was done prior to the regional frame survey on Lake Victoria conducted in 2000 and given the lack of comprehensive registration of fishery units on the lake, an estimate of about 100,000 fishing units was taken, based on projections from the last population census data (MFPED 1998). The

key informant data were collected from activity centres, namely fish landing sites and market centres. In the absence of any list of such centres, one had to be compiled for the purpose of the survey, based on information obtained from districts but consisting of accessible centres. At the time of the survey, there were ten Ugandan districts on Lake Victoria. The number has since gone up to 13 as new districts have been carved out of the existing ones¹. In this thesis, therefore, the original ten districts on which data were collected will be used. The districts were grouped into 3 clusters for the purpose of selecting sample sites and units. Sharma (1995) explains that cluster analysis is a technique for grouping observations into clusters or groups such that the observations in each cluster or group are similar with respect to the variable used to form the clusters and observations across groups are as different as possible with respect to the clustering variables (Sharma 1995 p. 12). However, Hoinville and Jowell (1978) caution that clustering affects the sampling error, by increasing it (Hoinville and Jowell 1978 p. 68) Considerations in the formation of clusters of districts included per capita incomes, population densities and growth rates, level of urbanisation and literacy, as given in Table 4.4.

¹ The new districts are Mayuge, formed from Iganga; Kayunga from Mukono and Wakiso from Mpigi.

Table 4.4 Identification of Poverty Clusters: (data for 1997)

District	Household Income (US\$hs)	Population	Pop. Density per sq km	Growth Rate per Annum (%)	Urbanisation % of Population	Literacy (%)
Bugiri	72,114	283,800	165	4.0	1.9	50
Rakai	89,152	456,400	99	3.0	3.9	50
Iganga	78,380	887,600	210	3.0	5.6	50
Kalangala	101,560	18,400	38	54.1	8.4	45
Masaka	112,530	1,015,400	216	2.7	10.6	60
Mukono	130,310	1,063,200	179	2.4	12	50
Mpigi	143,306	1,121,000	202	2.7	15	75
Busia	129,124	209,300	232	2.8	17.1	50
Jinja	154,520	397,300	428	1.8	27.9	60
Kampala	248,210	878,600	4581	4.0	100	80

Sources: MFPEd 1998

MFPEd 1999d

Based on the above criteria, Busia, Jinja and Kampala Districts were put together to constitute the Upper Cluster; Masaka, Mukono and Mpigi formed the Middle Cluster while Rakai, Iganga, Bugiri and Kalangala constituted the Lower Cluster.

A sample of 75 research sites, namely fish landing sites and market centres were chosen for the survey, distributed at 25 per cluster, selected randomly from a list of accessible sites as explained above. It was planned to interview operators of 20 units randomly selected per sample site. However, a total of only 1,400 units were interviewed under the unit level survey. The sample size was considered adequate for the different categories of fish activity units within the sample to be large enough for statistical tests to be valid.

The field data collection instruments evolved through a number of stages of preparation. Both the key informant interview schedule for the community level data (Appendix 1) and the unit level questionnaire (Appendix 2) were drafted while at the University in Hull, based on the initial ideas and discussions of what the research would achieve and what role the field surveys would play in this, vis-a vis the other instruments of data collection as summarised in table 4.2 above. To ensure quality in the data collection, emphasis was laid on the relevance of variables in the schedule and questionnaire. The validity of the data was a concern for the survey. Utwin (1995) explains that reliability is a statistical measure of how reproducible the survey instrument's data are. In any set of data collected, there would be some amount of error and the task is to minimise it. In survey research, error comprises two components, namely the random and the measurement error. Random error is unpredictable but arises mainly from sampling techniques. It can be lowered by selecting a larger and more representative sample. A measurement error refers to how well or poorly a particular instrument performs in a given population. In evaluating a data set, the starting point is to examine the reliability characteristics of the measurement instrument used (Utwin 1995 p. 7). In addition to reliability of a data instrument, it is necessary to assess its validity, or how well it measures the concepts it sets out to measure and not something else.

The Key Informant interview schedule is made up of seven sections, designed to capture data on the different dimensions. They include the demographic data,

infrastructure and facilities, social aspects, status of education, incomes, nutrition and health, fish production, processing and trade assets and activities.

The Unit Survey questionnaire, however, is made up of twelve sections, designed to provide a range of data as required under the research hypotheses and objectives. Formulation of these sections is guided by types of data required under the different concepts as given in Table 4.2 above. Some of the sections are general to all respondents while others are specific to certain categories. Section A applies to all respondents and is intended to provide data on the socio-economic characteristics of the respondent. These are important in affecting the behaviour and decisions of a person. Section B targets only operators of fishery production units and it is intended to collect data on production assets, activities and market, including the perceptions of the operators to these aspects. Data from this section would provide indication of consumption poverty within the different types of fish production operators. Sections C and D provide data on fish processing and marketing units. The data would be used to assess prevalence of poverty among fish processors and traders. Section E and the subsequent ones apply to all respondents again. The section addresses economic issues, aimed at drawing relationships between economic, marketing and financial factors and poverty. Section F is on social factors and the data from here are to guide the discussion on social influences. Section G attempts to generate information on alternative sources of livelihood for the households of fishery operators. The data are relevant in the discussion of survival strategies among fishing communities. Section H on extension provides data for the discussions on technology for the poor, resource availability and the institutional factor. Section I is on the respondents' information on and utilisation of research services available. The data are used to analyse technological and institutional factors. Similarly, Section J is on development projects and the data are to facilitate analysis of economic and institutional factors. Section F provides data on fisheries management, relevant for resource availability and institutional factors. Lastly, Section K addresses policies, generating data for resource, economic and institutional factors.

The implementation of the survey was carried out in stages. Prior to starting the field survey, the data collection team was taken through a one-week training

workshop, away from the office. The purpose was to agree on the full understanding of the meaning and purpose of the different elements of both questionnaires and train on interview techniques. In the process, the data collection instruments were put under scrutiny and questions that were unclear, difficult, offensive or irrelevant and could lead to dead ends were identified and listed. These were modified, replaced or earmarked for field testing prior to further decision on them.

The survey would be conducted across cultural boundaries, so there was need to carry out adaptation of the survey tools to ensure that they were reliable, valid culturally equivalent. Meadows and Wisner (2000) provide a description of a conceptual and objective framework for researchers in evaluating and selecting appropriate survey instruments for use across different cultures and language groups. They argue that it is not enough to carry out translations but first emphasis should be placed on making the questionnaire conceptually appropriate for the other culture prior to its adaptation. This point was noted and translations into the languages in which the interviews would be conducted, namely 'Luganda', 'Lusoga' and 'Lusamia' were worked on and notes made for the team members to ensure uniformity within the cultural differences. The issue of who would be the targets for the interviews was reviewed and respondents were decided upon. The training was followed by a one week pilot survey, during which the team went out to two beaches, Bugoto and Musubi, to pre-test the instruments. The occasion also served as practical field training for the team, at which interview skills, team roles and confidence building with the fishing village residents and the respondents in particular were all practiced. Data collection took place between September, 1999 and May, 2000. One-week trips were made to the field to conduct interviews, after which the team returned to office to prepare questionnaires, logistics and finances for the next leg. While in the field, de-briefing sessions were held with the team after each working day to review the progress of the day, compile researchers' observations and to put in place any course corrections that might have been considered necessary.

The community level survey was intended to precede and prepare for the unit level survey, with the aim of obtaining overview and factual information, from knowledgeable people at the landing sites and markets, necessary to guide the

activity unit survey. However, due to resource constraints, it was in practice not possible to make separate trips and the two surveys had to be carried out during the same visits. Measures were however, taken to ensure that the community level interviews were conducted before the unit survey. At each site, a team of community leaders rather than a single key informant were interviewed, as the issues investigated were quite diverse. This required that different knowledgeable persons in the different fields be interviewed. The people interviewed included the heads of the Village Local Councils (LC1), Landing Management Committee (LMC), Head Fishermen, Sub-county Health Officer and School Head Teacher.

The unit level questionnaire was conducted with heads of fishery activity units or their representatives. It covered fishing, fish processing and fish trading units. Confidence building steps taken included a short address to the community prior to the interviews to introduce the exercise and clarify that it was not related to any of the usual unpopular state activities at fish landing sites, namely tax collection, enforcement of fisheries regulations or other areas of law and order. The team took advantage of its knowledge of many of the landing sites from previous research activities. All issues that emerged at the different stages of the field research were noted, discussed and decisions made on how to handle them.

There were also some limitations to the research, which could have resulted in bias. The entire data collection activities were carried out during the time when there was a ban on Lake Victoria fish to the EU market due to fish poisoning during 1999 – 2000 for about 18 months. The limited fish export was to the Asian countries while the bulk of the production was being marketed locally and within the region. Fish prices and the fishing industry in general had, therefore, been affected by this development. The questionnaire was also long and needed time, which some respondents could not spare, so they had to be substituted. It also had some sensitive questions. To overcome these problems, it was necessary to exercise flexibility in the field with respect to the randomly selected respondents by substituting those who were not available. It was also important that at the start of the exercise at any landing site, both the communities and the individual respondents were prepared through short statements. Other sources of bias could have been in the respondents themselves (Hedges and Ritchie 1996). Different respondents could have understood some questions in different ways.

Memory may have been faulty about some issues. Respondent's analyses of their behaviour may have been inaccurate. They may not have thought about the issues so their immediate answers may not reflect the real position. Overall, however, it is believed that good quality data were captured during the research and the findings generated can be relied upon.

4.10 Display of Data

The survey generated both categorical and measurement data. The data were analysed using the SPSS version 9.0 package. The first step in the analysis process was to enter the data on a data editor file. This was followed by error tracking, using the Descriptive Statistics, Frequency... function. Thereafter, the categorical and measurement data were analysed differently.

With respect to the categorical data, the observations were summarised and described using Descriptive Statistics, Frequencies... Kinnear *et al.* (1991) explain: "The objective of descriptive statistics is to provide summary measures of the data contained in all the elements of a sample. In doing so the marketing researcher is usually concerned with measures of central tendency and measures of display" (Kinnear *et al.* 1991 p. 519). The frequencies were generated in percentages or counts. Bar charts were also used in presentation of categorical data summaries. Secondly, tables involving more than one variable were generated on the data using either Descriptive Statistics, Crosstabs... or Custom Tables, General Tables... The chi-square test for relatedness was applied to the analysis of the relationship between two categorical variables. To interpret the chi-square print out, the Pearson statistic was examined. If its significance was less than 0.05, there was a significant relationship between the variables (The Applied Statistics Centre, University of Hull 2000a). For some of the questions, respondents were free to give more than one response. For such a question, the Multiple Response Analysis was used to obtain frequencies of the multiple responses of the entire sample for the question.

Measurement data were examined for normal distribution prior to further analysis. Measures of central tendency were calculated to provide estimates of the population, using Custom Tables, General Tables... The standard deviation

was examined as a measure of variability. Where two continuous variables were analysed, linear relationship between them was checked using Simple Bivariate Correlation. The Applied Statistics Centre, University of Hull (2000b) explains that the coefficient has a range of possible values from -1 to $+1$. The value indicates the strength of the relationship, the higher the value, the stronger the relationship, while the sign (+ or -) indicates the direction (The Applied Statistics Centre, University of Hull 2000b p. 7). A further discussion on detection of relationships between variables is provided by de Vaus (1991), explaining the need to distinguish between causal and spurious relationships.

Results of qualitative data and information would be presented in a narrative form.

4.11 Conclusion

The chapter presented the methodologies used in carrying out the research. They included the literature review; conceptualisation of the fishery sector and of poverty causation within the communities on Lake Victoria; identification of relevant variables to reflect the concepts examined, data collection through the use of secondary and field data gathering instruments, analysis and presentation of the data.

The literature review, reported in Chapter Three, formed a part of the research activities. The aim was to establish the knowledge base on the subject of poverty, focusing on policies, issues and methodologies and draw lessons for research and development on of Lake Victoria. It examined trends in global and regional wealth distribution where it was noted that wide disparities existed between the developed and the developing world. There were also disparities among the developing regions themselves, with East Asia being among the best performing regions while Sub-Saharan Africa and South Asia achieving the least in poverty reduction by the end of the 1990s (World Bank 2001c). Inadequate growth and low investment in social services were responsible for performance in the poor regions, attributed to inadequate resources, policy constraints and inadequate investment in human capital. A historical review of development policies and strategies and their effects on poverty was carried out. It was noted that while

successive strategies contributed towards growth, their achievement towards poverty alleviation were less satisfactory, hence the need for continually developing new strategies.

The concept of sustainable development was examined and suggestions to improve on the two-way relationship model involving poverty and resource degradation were reviewed. The additional factors suggested included access to resources, affluence, technology, culture and values (Lélé 1991). In managing of the natural resources, Drummond and Symes (1997) pointed out the need to target regulations at the causes of the unsustainable tendencies, rather than the symptoms. Ideas for shared roles between the state and user groups in resource management were presented by Sen and Nielsen (1996). Criteria for successful co-management of the resources were suggested by Ostrom (1990) and Pinkerton (1989). These theories were considered relevant in strengthening fisheries management on Lake Victoria.

The different dimensions of poverty were identified, namely inadequate consumption, lack of achievement in education and health, a sense of insecurity and a state of risk among the poor. The causes put forward included lack of income and assets to attain basic necessities of life; various forms of bad governance and vulnerability of the poor to adverse shocks and their inability to deal with them. The strategies highlighted to address poverty included promoting opportunity, facilitating empowerment and enhancing security among the poor (World Bank 2001c).

As part of the preparation of the research project, the fisheries of Lake Victoria were conceptualised. It was noted that there were relationships between the various activities within and outside the fisheries. In order to analyse their effects, the concept of externalities was introduced, making distinction between inter and intra-industry externalities. The other important distinction was between real and market externalities, where the former affected the production and consumption levels of other units directly while the latter affected them through the market (Johnston 1992). Because of the interlinkages between activities within a natural resource, the need to develop an Aquatic Resource Management Plan (ARMP) was discussed. An ARMP was a descriptive tool, prepared for a well defined geographical area, important for providing proper

context, aiding priority setting and facilitating implementation of policy and legislation through the project cycle. It was pointed out that the methodology for development of an ARMP should enable the needs and aspirations of all water users to be accommodated where possible and facilitate effective planning of development of the environmental resource. The ARMP was also useful in assessing whether the activities met the set objectives.

The fish commodity system was conceptualised with the aid of a descriptive model, depicting four main flow channels for fish. The model would be used in the poverty study to identify the points where the different poverty factors operated, thus facilitating effective targeting by poverty alleviation interventions. The first channel was that which served the subsistence fishers, characterised by traditional gear and techniques and producing for household consumption. The activities were often on part-time basis. Women participation was noticeable here. Progress within the channel was not evident. The second channel was that which served the overseas export market. It involved larger scale operations than the rest, bigger capital investments, better organisation, higher quality products, better facilities and greater earnings. Within the channel, artisanal fishers supplied industrial fish processing plants directly or through factory agents. Chilled fillets of *L. niloticus* as well as frozen fish were exported mainly to destinations in Europe, Asia and USA. The remaining fish frames were sold on the domestic market. Despite the high earnings associated with the trade, it was highly risky because of the frequent fish ban on the EU market, due to food safety concerns and other factors over which Uganda had little control. The largest channel was the domestic market for fish, in terms of employment and volumes of fish. It also supplied fish to the regional markets. However, it was limited by widespread unsustainable fishing practices, poor infrastructure and services and low purchasing power among consumers. Finally, there was the channel that delivered *R. argentea* from producers to plants processing animal feeds, an industry that had been growing of recent. There was concern that the industry was depriving human consumers of a source of nutritious affordable fish supply, threatening the population with malnutrition.

A conceptual framework for poverty analysis on the research was developed as a descriptive tool that identifies the factors and relationships within the poverty

situations. It draws on the strengths of the Lélé (1991) and the World Bank (2001c) models and builds upon them to provide a more relevant framework for Lake Victoria. Among the poverty causing factors on the model was the institutional framework, which referred to the roles and responsibilities of Government for economic policies, resource management, provision of services and good governance. The market mechanism referred to both international and domestic trade influences. Globalisation and affluence could lead to higher earnings for the fish suppliers involved, create jobs within the trading channel and generate foreign exchange earnings for the country. However, it could also deprive the poor local consumers of access to fish due to the high fish prices created, eliminate artisanal processors and traders from their livelihood activities and threaten the sustainability of the resource by attracting excess effort. Social factors considered important on the model included the local institutions that would facilitate community participation in resource management. The role of gender and culture in poverty would be reflected here. The influence of technological constraints within sustainable fish production, quality maintenance and distribution is identified. Limited financial resources and services to the artisanal fishery operators were another factor. Economic factors, including policies, wealth distribution, entrepreneurial abilities, cost considerations and alternative sources of income, among others, could have effect on poverty. Lastly, resource availability could affect poverty as postulated by Lélé (1991).

The concepts identified in the model were translated into measurable variables and a data collection plan developed, using secondary data search, key informant and sample survey instruments. Variables for each type of survey were allocated and sources of secondary data identified. On the basis of a comprehensive sample survey plan, field data were collected using the Key Informant and Unit Level questionnaires. Lessons have been learnt from the experiences on the exercise that would be valuable for future use within a similar situation.

The chapter was, therefore, able to link the findings from the literature review and the research methodologies; conceptualise the fish sector as well as the poverty relationships on Lake Victoria. It identified measurable variables that would reflect the concepts within the fishery sector and the poverty model; formulated a workable data collection plan for Lake Victoria fisheries and

designed data collection instruments. Methodologies have, therefore, been refined and lessons learned for replication elsewhere. New data sets on the fisheries of Lake Victoria have, in the process, been generated.

CHAPTER FIVE

THE NATURE AND DISTRIBUTION OF POVERTY IN THE FISHERIES

5.1 Introduction

While there has been considerable discourse on the concept, regional distribution and trends of poverty, rather less work has examined it within the sectoral context. Historically, sectoral poverty comparisons have mainly been between industry and agriculture, with the former said to be the engine of growth while the latter associated with poverty. Various development strategies have, subsequently been designed to address poverty within the context of agriculture, with limited application to other natural resource sectors. In Uganda, it is often said that programs instituted to implement important Government policies towards poverty eradication do not adequately target the fisheries. Both PEAP and PMA are said to lack the necessary orientation and focus that would make them effective towards dealing with poverty within the context of fisheries. This could be attributed to the insufficient knowledge of the rather peculiar nature of the fisheries production system, within the broad agriculture sector, with much of its functions and relations not adequately elaborated.

Several studies have been implemented on Lake Victoria, seeking to contribute towards alleviation of poverty as their ultimate goal and in the process, they have made some contributions towards the understanding of the poverty. However, given the broad and complex nature of the problem, much has continued to remain unclear and undocumented. This chapter is aimed at making a contribution towards this understanding. Its objective is to identify which types of poverty prevail within the fisheries of Lake Victoria, the groups of people and which geographical regions are affected. It draws upon the findings of the literature review in Chapter Three on the different dimensions of poverty, namely inadequate consumption, lack of achievement in education and health, sense of insecurity and exposure to risk as well as the accompanying indicators. It further draws upon the conceptual framework of the fish commodity sector developed in Chapter Four to identify the activity centres and operators within the different

channels of fish flow for targeting by the analysis. The chapter addresses the research questions of what the indicators of poverty in fisheries were, whether poverty was associated with any particular fishery activities and functions and which groups and regions were most affected. It is not the intention to develop refined poverty lines for fisheries (Appleton *et al.* 1998; Ravallion 1992). The data presented are only indicative of the poverty profiles with respect to the different activities, groups and regions on Lake Victoria. According to Ravallion (1992), a 'poverty profile' is simply a special case of a poverty comparison, showing how poverty varies across sub-groups of society, such as a region of residence or sector of employment. It can be useful in assessing how the sectoral or regional pattern of economic change can affect overall aggregate poverty (Ravallion 1992 p. 50). Available information from different sources, research data and field observations are put together to build a picture of the poverty situation in the fisheries. This would form a basis for identifying the appropriate target groups for poverty interventions within the fisheries.

The chapter begins with a national view of Uganda's poverty status across the different sectors of economic activities. This would provide the background situation to which comparisons of the poverty profiles on the different activities, groups and regions could be made. The position with respect to consumption poverty will be examined, making use of income data and categories of activities, social groups and regions with low earnings and therefore, low consumption levels will be identified. The chapter will examine the levels of educational achievement and health and discuss them as dimensions of poverty. Available information will be examined to assess if any segments of the fishing communities endure any sense of insecurity and exposure to risk. Observations made within the chapter will, then, be synthesised in the conclusion section.

5.2 Consumption Poverty

The first concern of the research was to provide information on groups within the fishing communities affected by inability to meet their consumption needs, both material and social, based on their earnings. The starting point was to examine Uganda's National Accounts and income performance within the fisheries sector

from a macro-economic viewpoint. Henderson (1965 p. 8) provides an understanding of the two concepts of national income, stating: “There are two convenient concepts of income. (1) Income can be thought of as the cost of producing the aggregate output of society. ‘Income at factor cost’ is a measure of output at the cost of producing the output. This cost includes the wages of labour and such returns to the other factors as will cause them to be forthcoming. Hence it measures output conceived of as ‘supply’. (2) Income may also be regarded as the value of output. In this sense, income measures the expenditure of society on output. Consequently, income as the value of output may be thought of as ‘demand.’” The Uganda National Income Statistics makes use of the former concept of national income, calculated based on factor costs, using the 1991 prices. In reviewing these data, use was made of two published reports of Government on poverty trends covering the period dating back to 1992/93 (Appleton *et al.* 1999, Appleton 2001). The analyses were based on the Integrated Household Survey (IHS) of 1992/93 and subsequent Monitoring Surveys (MS), namely the First MS of 1993/94, the Second MS of 1994/95, the Third MS of 1995/96, the Fourth MS of 1997 and the last one of 1999/00, conducted by the Uganda Bureau of Statistics (UBOS 2000a, 2000b, 2001c). Consumption Per Equivalent Adult (CPEA) derived from household private consumption data from the above surveys were used. Ravallion (1992) explains the concept of CPEA as follows: “Households differ in size and composition and so a simple comparison of aggregate household consumption could be quite misleading about the well-being of individual members of a given household” (Ravallion 1992 p. 15). The figures show a decline in overall poverty percentage of the poor from 55.5 in 1992/93 to 44.0 in 1997 and further down to 35.2% in 1999/00 and this is attributed to the growth of the economy over the period (UBOS 2001c). The analyses attempted to give the poverty changes by sector, based on the income activities of the heads of household as reported in IHS, the Third and the last MS surveys as summarised in Table 5.1 below:

Table 5.1: Poverty Rates by Employment Sector of Household Head, 1992-96 (Ushs):

Sector	1992/93			1995/96			1999/2000		
	Population Share	Mean CPEA	P0	Population Share	Mean CPEA	P0	Population Share	Mean CPEA	P0
Food crop	47.2	5,700	63.7	44.2	5,900	62.2	39.1	7615.1	45.4
Cash crop	23.4	6,100	60.1	26.7	7,800	43.7	28.1	8233.9	34.3
Non-crop agric.	2.7	6,800	52.8	2.1	8,600	39.8	3.2	8837.1	41.4
Mining	0.1	9,500	31.5	0.2	5,900	74.2	0.5	7141.7	43.2
Manufacturing	3.7	8,200	44.8	3.3	10,900	27.4	2.9	11937.7	25.3
Public utilities	0.1	9,200	33.6	0.1	13,600	11.1	0.2	15941.6	0.0
Construction	1.3	11,200	38.2	1.1	9,800	34.7	1.5	11945.4	22.9
Trade	6.7	12,700	25.9	6.8	14,200	19.4	7.4	15845.9	12.8
Hotels	0.6	9,900	30.4	1.0	11,900	19.9	1.0	14899.7	16.5
Transport/comm.	1.5	10,400	31.5	1.9	15,200	14.9	2.1	15344.8	15.2
Misc. services	1.6	13,800	26.2	2.2	11,700	29.1	3.3	17936.4	17.8
Govt services	6.8	11,200	35.0	5.5	12,700	28.0	5.7	15072.5	17.4
Not working	4.3	6,900	60.2	4.9	7,900	63.4	5.0	9714.3	43.7
National	100	7,100	55.5	100	8,100	48.5	100	9750.9	35.2

P0 = Poverty Headcount Index
 (Appleton *et. al.* 1999 p. 40-41; Appleton 2001 p. 12)

Table 5.1 shows that the cash crop agriculture sector experienced strong decline in poverty proportion from 60.1 in 1992/93 to 43.7% in 1995/96 and to 34.3% in 1999/00. This sector is also said to have been instrumental to the overall decline in national poverty between IHS and Fourth MS. This is attributed to the rises in the Uganda coffee export prices which at its climax in 1994/95 reached 2.55 US\$/kg, three times its 1992/93 price of 0.86 US\$/kg before declining to 1.33 US\$/kg in 1996/97 (Appleton *et al.* 1999 p. 23). Manufacturing and trade were other sectors with strong poverty declines, although they began at lower levels of poverty. In the 'Mining', 'Not working' and 'Miscellaneous service' sectors, however, poverty increased, so the data reveal where the 'engine of growth' for Uganda were.

However, the analysis does not treat fisheries as a separate classification of its own but as part of 'Non-crop agriculture' as shown in Table 5.1. Clarifications with UBOS revealed that this category also includes livestock and forestry. This sector has shown moderate poverty decline from 52.8 in 1992/93 to 39.8% in 1995/96 then up a little to 41.1%. Because of the aggregation of the activities within the classification, it is difficult to make conclusive suggestions. However, it is noted that the modest decline in poverty has occurred despite the rising prices on the fish market due to increased fish exports that characterised the period. The price of fish on the domestic market went up by 173 % between 1992/93 and 1995/96 (MFPED 2000a). The table shows a persistently higher CPEA in the 'Non-crop agriculture' than in both 'Food crop' and 'Cash crop' sectors and over the above period, it has risen by a higher proportion (26.5%) than the national poverty line (14.1%) but thereafter, its growth slowed down, attributed to the ban on Lake Victoria fish to the EU market in 1999 for 18 months, which led to decline in fish prices. As will be shown later in the chapter, this is not a reflection of better minimum feeding requirements by fishing and other 'Non-crop' communities but difficulties associated with obtaining food and the resultant rising food costs among them. The analysis, therefore, indicates significant income poverty in the "Non-crop" sector, which includes fisheries. Other National Accounts figures show that the contribution of fisheries to GDP, both monetary and non-monetary, declined from 2.5 in 1992/92 to 1.9% in

1999/00, reflecting a sector which is not rapidly growing relative to the rest of the economy (MFPED 2000a p. A13).

Apart from the over-aggregating of sectors and concealing of the peculiarities within smaller but important sectors like fisheries, another limitation of the national household surveys was that they attempted to capture data on the several different sectors simultaneously using same data instruments. In some cases, the instruments would not be relevant or applicable. The variables currently selected for the MS were, as a matter of fact, heavily directed towards the crop sector of the economy, presumably because that was where the poverty was believed to be greatest.

Participatory studies carried out at different places and times have also revealed situations of consumption poverty among fishing communities on Lake Victoria. (MFPED 2000d) reports of the previous consultations conducted at four sites in Kalangala District under UPPAP. This was a three-year participatory poverty consultation process started in 1998 as part of Uganda Government's efforts to increase the understanding of poverty under the on-going PEAP (MFPED 1999 p. 58). The objective was to consult the poor in Uganda and bring their voices into the planning for poverty eradication. This would lead to developing a better understanding of poverty and assessing the impact of Government policies on the poor. Kalangala was one of the districts selected for the UPPAP consultations, the others being Kisoro, Kabarole, Kumi, Kapchorwa, Kotido, and Moyo. In addition, Kampala was chosen to represent the face of urban poverty; and Bushenyi was chosen as a district of contrast in which quantitative indicators had registered a decline in poverty in recent years. Participatory Poverty Appraisal (PPA) was carried out at four sites in the District, namely Kalangala Town Council, Bbeta, Misonzi and Mazinga, using a wide range of Participatory Rural Appraisal (PRA) tools. The last two of these sites represented fishing communities. The report described a dimension of the poverty in Kalangala as "A situation of perpetual need for the daily necessities of life, such as shelter, or clothing....." (MFPED 2000d p. xiii).

The UPPAP consultations grouped the communities at the selected Kalangala sites into four categories, running from the richest to the poorest and designated the last two as groups living in poverty. Sets of indicators had been developed

with the communities for the purpose. Through wealth ranking exercises, UPPAP identified situations of consumption poverty within the consulted communities, which reported it as the inability of the identified groups of people to afford food and decent housing and medical care, with the affected individuals said to own few belongings. This was attributed to lack of money and lack of reliable jobs. Groups affected included the youth working on boats, a few boat owners, employees working in pubs and homes, the unemployed and generally the women within the communities (MFPED 2000d p. 19).

Similarly, the LVFRP was able to identify elements of consumption poverty at the fish landing sites where it carried out its PRA work. The exercises were conducted at Lwalalo and Nkombe Fish Landing Sites in Mpigi and Mayuge (formerly Iganga) Districts respectively in 2000 (SEDAWOG 2000a, Atai *et al.* 2000). The overall objective was to obtain baseline information in preparation for a one-year participatory fisheries management monitoring study at the beaches. Some of the specific objectives included identifying the community-based organisations and institutions which had a role in the fisheries and to examine the key socio-economic issues for the involvement of the communities and institutions in the co-management of Lake Victoria's fisheries. In Lwalalo, the findings from the wealth ranking exercise were that there were community members falling in the group of the income poor. They were, however, perceived to be the smallest group, compared to the middle income and the rich groups at the site. There were no values to the income levels of the groups from the PRA studies. However, to indicate their level of well-being, the poor could afford a limited choice of food but they did not own a bicycle, a house, a boat or land and could not educate their children. The group consisted mostly of the fishing crew. The middle income group also had a limited choice of food but also owned a cow and a few goats, a piece of land, a permanent house, a bicycle and a boat. A rich person could afford to eat anything he/she wanted, had a big piece of land, a beautiful home, at least three livestock, a car, more than one boat and a poultry farm (SEDAWOG 2000a). In Nkombe, the exercises revealed a presence of poor people at the site. They were perceived to be fewer in number than the middle income group but more than the group of rich people. They were said to be unable to afford washing soap nor to obtain regular meals, had inadequate

sleeping provisions and suffered from such degrading infections like jiggers. The group falling in this category were said to be always the labourers on boats (Atai *et al.* 2000).

An earlier LVFRP survey attempted to estimate income levels on Lake Victoria in Uganda as well as in the other countries as part of a fish marketing study. However, the exercise was not conclusive and the authors concluded: "Respondents did not really know what incomes they 'earned', given that incomes tend to vary from day to day and demands on income also fluctuate depending on domestic requirements or the demands of the wider community. Questions regarding income, therefore, generated a wide range of answers which are unlikely to portray 'true' income" (SEDAWOG 1999 p. 19). The lesson from the LVFRP survey was on how to handle sensitive questions like people's earnings.

However, there were some limitations to the findings of the participatory studies that needed to be noted. First, like all PRA studies, the findings were specific to the sites and times of study and statistically, there was limited scope for generalising them to cover other fishery situations on the lake. Secondly, the UPPAP consultations reported difficulties of ensuring participation of women in the activities, a major interest group in the fisheries. The LVFRP studies were carried out over very short time, not allowing community members adequate time to internalise their objectives and participate with confidence. In Nkombe there was in fact a big suspicion surrounding the whole project, alleged to be trying to buy the land and cause displacement of the community.

In the research for this thesis, information on the incomes earned by different categories of fishery operators was obtained in accordance with the methodologies described in Chapter Four. (Lee 1985 p. 6) defines income as "the surplus arising from business activity and derived from periodic matching of revenues from sales with the relevant costs." It distinguishes between the accounting and an economist's view of income. The accounting income was conceived as business achievement over a time periodic, accepted by the business community as the measure of an entity's operational success or failures. In the economist's view, however, income was conceived as a personal rather than an entity measure, since not being a human being, an entity could not

have income. In this research, the human income definition is adopted, measured from the sales revenue and costs from each of the fish species or products fished, processed or traded, as shown below:

$$Y = (R1 - C1) + (R2 - C2) + \dots + (Rn - Cn) - Cf$$

Where Y is income in a time period

R1...n are revenues from products 1...n, given by the sale of quantities of the fish at the prevailing prices

C1...n are costs of production, given by the quantities of the different species or products at prevailing unit costs

Cf are any fixed costs that may be applicable to the particular activities.

The categories of fishery operators targeted by the analysis were owners of fishing units, fishing labourers, operators of traditional processing units and fish traders. The information was further disaggregated to reveal the gender dimension of the poverty and the regional distribution was illustrated by doing district categorisation. Further disaggregation was done, distinguishing between motorised fishing versus non-motorised and boat owners versus renters of boat. Differences between the different ethnic groups given by tribes and between regions given by districts were also explored. Lake Victoria fisheries were characterised by a large number of artisanal operations, owned by individuals or households. They operated with one form of fishing gear or another (95.3% of fishing respondents), with the majority operating gill nets (79.6%) while others used beach seines (2.2%), mosquito seines (7.2%) and other gear types. The main species included *L. niloticus*, targeted by some 38.0% of fishers, *O. niloticus* by 39.0 % and *R. argentea* by 11.6%. Further details of the operations of the fishers would be discussed in Chapter Seven in explaining the causes of poverty among the fishers.

Respondents involved in fishing were asked to provide information on their average weekly catches as well as the prices at which they sold them. On the

basis of these, weekly revenues were computed, from which monthly estimates were derived by adjusting for the days accordingly. The cost items included labour, which was taken as a proportion of sales at 30% or as a flat rate as reported by the individual units. Data were collected on costs of gear, namely gill nets, beach seines, mosquito seines and others. Depreciation on these were taken on the basis of two-year life time, or 1% per week. Cost data on boats and outboard engines were collected and assuming lifetime of 4 years, they were depreciated at about 0.5% per week. Operational expenses for the outboard engines were also collected. Other expenses were taken on a fixed basis, namely boat licence and landing fees and other small cost items were recognised but not specifically covered under data collection, such as cigarettes for the crew and periodic contributions towards cleaning of site, visitors to beach and beach administration.

The overall monthly income picture is given by Table 5.2. The table shows mean monthly earnings by fishers involved in each of the three commercial species as well as their minimum and maximum values. These could be compared to the gross national per capita income for 1999/00 of US\$ 141,000 (UBOS 2001c p.48). The figures show that on average, *L. niloticus* fishers earned more than the others, and *O. niloticus* fishers earned least of the groups. The results were in line with the relative abundance of the different species, with the *L. niloticus* leading, *R. argentea* following and *O. niloticus* coming third within the main commercial species. The *L. niloticus* was also the species that benefited most from the high prices associated with export. Although at the time of the research there was an EU ban on Lake Victoria fish, some amount of fish fillet was still being exported to other destinations around the world.

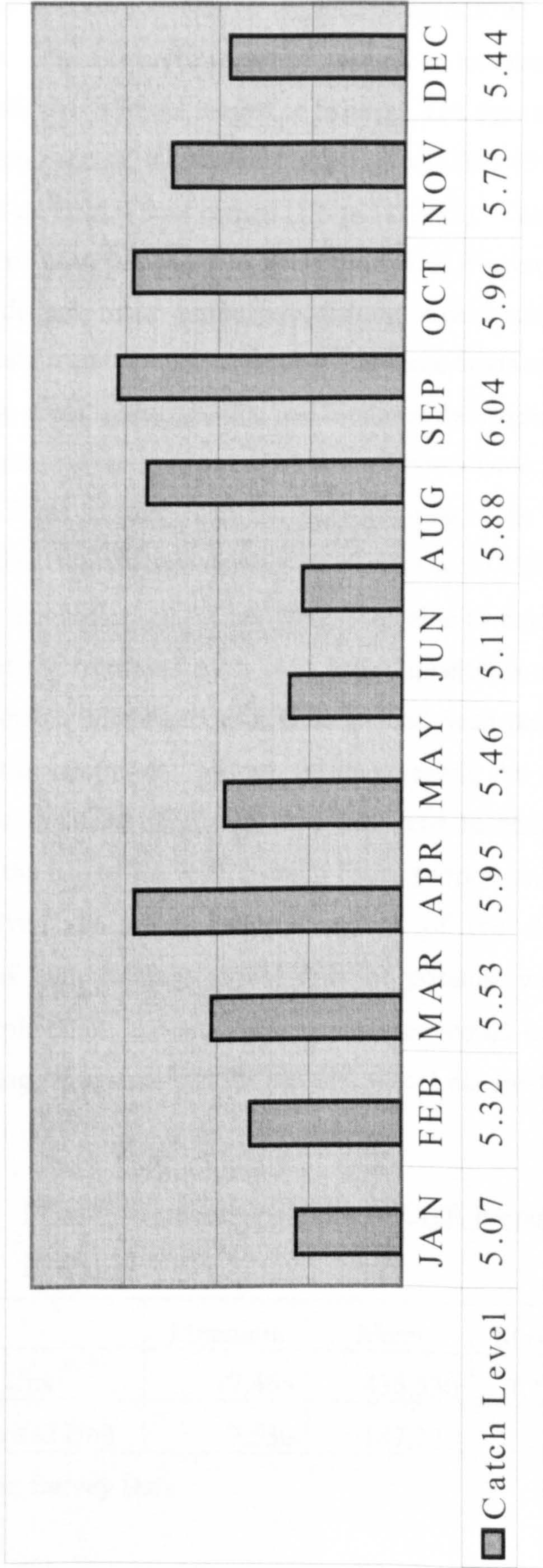
Table 5.2 Monthly Earnings of Operators of Fishing Units (UShs):

	Minimum	Mean	Maximum	Valid N
<i>O. niloticus</i> Fisher	7,164	129,278	1,414,320	N=280
<i>L. niloticus</i> Fisher	15,480	279,473	3,214,885	N=268
<i>R. argentea</i> Fisher	15,000	207,742	1,663,200	N=94
Average Fisher	7,164	208,030	3,214,886	N=610

Source: Survey Data

The data presented a 'snapshot' situation as at the time of the data collection. However, levels and intensity of fishery activities were known to vary during the course of the year. This would be in response to fish availability, weather conditions on the lake, demand for labour in alternative activities, particularly at crop harvesting or other peak farming activities. To gain appreciation of this, respondents were asked to indicate how they perceived the levels of their fish catches during the different months of the year using a 10-point rating scale. The responses received were summarised as presented in Figure 5.1 below:

Figure 5.1: Perceived Variations in Fish Catches During the Months of the Year:



Source: Survey Data

There have been parallel operations of motorised and non-motorised fishing activities on the Lake Victoria for several years now. However, there had been few, if any comparative studies of the returns associated with the two categories of operations. The research, therefore, sought to examine broadly the earnings associated with the different modes of fishing. The figures as given in Table 5.3 showed that on average, a motorised boat earned UShs 436,530 which was 233% what the non-motorised boat earned (UShs 187,223). This could be attributed to the capacity of powered boats to get out of local overcrowded fishing grounds and access distant more productive fishing areas, something that the non-motorised boats could not do. The best that these boats could do was to migrate to new fishing areas, a practice that had hindered development of many fishers as they were constantly on the move. Motorised boats were also bigger and able to carry larger fleets of gear than the non-motorised. In the survey, among *L. niloticus* fishers, the average number of gillnets were 155.1 for motorised boats and 40.2 for non-motorised. They were, thus able to enjoy economies of scale, spreading out the overhead costs over larger quantities of catch than the non-motorised fishers. Motorisation in fisheries had been recognised as a powerful technological development. Indeed, in the research, the majority of the fishers identified the outboard motor as their preferred technology (71.1% N=622), followed by the use of ice with a much lower proportion of (8.7%) and others. However, given the sustainability concerns of the fisheries resource, the advantages of high earnings would only be possible within certain limits of motorised exploitation and any further increases would lead to depletion of the species, driving the system into the poverty sink (Lélé 1991).

Table 5.3 Monthly Earnings by Mode of Craft Propulsion of Fishing Units (Ushs):

	Minimum	Mean	Maximum	Valid N
Motorised Unit	17,465	436,530	3,214,885	N=81
Non-Motorised Unit	7,530	187,223	1,811,850	N=424

Source: Survey Data

While virtually all the owners of fishing enterprises on the lake owned some form of gear or another, there was a clear dual pattern of ownership of boats, similar to that of engines discussed above. In the survey sample, the majority of the fishers owned and operated their own boats (80.6% N=671). However, except for a few who were engaged in non-boat fishery, the rest of the fishers hired boats for their operations. The rates were in the region of UShs 10,000 per week. In the survey, boat owners had a mean monthly income of UShs 229,497 compared to UShs 113,042 by renters of boat. Incomes of the two categories of operators were compared as indicated in Table 5.4. The main explanation in variation in income was reported to be lack of reliability of operation under the boat rental method. Many of the boats were rented on weekly and sometimes daily basis. The owner had the liberty to offer it to a particular fisher or another and often, one did not have access to a boat under this arrangement. This lack of security to the user was often reflected in lower returns from the operations.

Table 5.4: Monthly Earnings by Ownership of Boat by Fishing Units (UShs):

	Minimum	Mean	Maximum	Valid N
Own Boat(s) Unit	7,530	229,497	3,214,885	N=499
Rented Boat(s) Unit	7,164.	113,042	697,500	N=89

Source: Survey Data

Women formed an important social group in the fisheries. Although fishing on Lake Victoria had traditionally been a male occupation and had continued to be dominated by men even to the present day, an increasing number of women had been making their entry, mainly as owners and managers of fishing units. The women were entering the fishery either voluntarily or involuntarily. Many women, having perceived that there were opportunities for earning good income, decided to take the necessary measures to set up fishing enterprises. There were others, however, who found themselves with the responsibility to run fishing enterprises as a result of death of their husbands, leaving no one else to take responsibility for the equipment and activities established under the family.

There had not been a clear documentation of how the women in fishing had performed, relative to the men on Lake Victoria. Consequently, the research compared earnings of fishers in order to provide a picture of the gender impact on fishery production. Table 5.5 offers the gender disaggregation of the earnings from the survey. Despite the differences in the number of males and females in the sample, the data revealed that the mean income for females (US\$ 200,137) was close to that of males (208,891). Despite their recent entry into the fishery, the good performance of women was reported to be attributed to their good management and non-wastefulness in handling of resources. Greater discussion of gender issues in fisheries poverty is given under the discussion of insecurity later in this chapter.

Table 5.5: Mean Monthly Earnings by Sex of Fishing Unit Operators (US\$):

	Minimum	Mean	Maximum	Valid N
Male	7,164	208,891	3,214,885	N=550
Female	10,824	200,137	1,811,850	N=60

Source: Survey Data

Another important social group with a stake in the fisheries was the youth. However, the role of the youth in fisheries was not so much in ownership or management but in providing labour to the fishing units. Historically, household youths were important workers for fishing operations. However, with the growing need for children to go to school, most of the labour provided on the boats became hired, provided by youths seeking employment and getting paid for it. As reported earlier, two methods of payment for labour were identified during the study, namely the share system, where the labourers get 30% of sales and share it out among themselves, or the fixed rates. The research estimated payments to labour under the two arrangements. The findings, presented in Table 5.6, showed that mean monthly payment per labourer on flat rate arrangement was US\$ 86,867, which was 247.8% the amount paid to one on the proportionate share system (US\$ 35,056). Owners of fishing units preferred to

employ most of their labourers on the proportionate share system basis because they could pay them less. Furthermore, the system exposed the labourer to as much of income risk as the owner of the unit. The high rate of unemployment in the country as a whole and in particular among the rural youth made it possible for this arrangement to operate, and it was a reflection of the extent to which the youth in the fisheries were disadvantaged.

Table 5.6: Mean Monthly Labour Payments by System of Payment (UShs):

	Minimum	Mean	Maximum	Valid N
Share System	1,653	35,056	321,428	N=483
Flat Rate	1,428	86,867	1,285,714	N=187

Source: Survey Data

Another type of social grouping of fishers was based on their ethnicity. The culture, indigenous knowledge and skills relating to fishing were reported to vary from one ethnic group to another. Some of the groups were known to be historically fishing societies while others were not (SEDAWOG 2000b). The research examined earnings by ethnic grouping, using the fisher's tribe as the indicator of ethnicity. The data showed that the Baganda had the highest mean earnings. This was not un-expected because they were historically a fishing tribe, with long history of association with the lake. For the Buganda Kingdom as a whole, Lake Victoria was important because one of their gods 'Mukasa,' responsible for war, was said to reside in the Bukasa Islands, so the lake was part of their lives. Furthermore, the Baganda were well organised people, exhibiting strong co-operation and support for each other and were said to be highly enterprising. They would, therefore, be expected to apply their strong business qualities in the fishing operations. Compared to other tribes, they were also better educated and skilful and had better access to financial resources including credit, which could enhance their activities. They also operated in areas where the fish market was good, being near to the fish processing factories and having access to better infrastructure and services, particularly transport. The data showed that the next group actually consisted of a number of different small

cultural groups put together as 'others'. They included the Bagisu, Banyoro, Alur, Bagungu, Lugbara and Banyarwanda, among others. Most of these moved onto Lake Victoria from other water bodies of the county, namely Lakes Kyoga, Albert, George and Edward, so they already had good experiences with fishing and were able to bring in new ideas to Lake Victoria. The same applied to the Iteso and Jupadhola who came third and fourth respectively. Both groups came from eastern Uganda and were originally associated with Lake Kyoga. The low performance of the Basoga, the second largest Ugandan tribe on the lake may be attributed to the fact that they were mostly seasonal fishers, pursuing farming and other activities during certain months of the year.

Table 5.7: Mean Monthly Earnings of Fishing Units by Ethnic Group (UShs):

	Minimum	Mean	Maximum	Valid N
Baganda	7,635	271,208	3,214,886	N=310
Others	8,250	181,590	1,663,200	N=120
Iteso	17,433	173,293	615,930	N=18
Jopadhola	10,560	162,153	699,420	N=21
Basoga	9,582	122,436	578,333	N=57
Bakenye	10,776	91,566	231,330	N=16
Basamia	7,164	89,191	700,230	N=68

Source: Survey Data

Much of the existing information on the fisheries activities had drawn little attention to the geographical aspect of the issues, treating Lake Victoria, Uganda as a single uniform situation. The vast coverage of the fisheries would imply that regional variations exist, arising from the diverse resource, social and economic conditions. Detailed discussions of these factors would be given in Chapters Six to Nine below. Briefly, however, it should be mentioned that fish stocks and species composition varied from one habitat to another, determined by food availability and other parameters that determined the 'health' of the lake. These

variations resulted from human activities in the different places, causing pollution, habitat damage and overfishing. They often also resulted from natural causes such as eutrophication and weed invasions, a notable example being the recent massive water hyacinth growth on the lake. In terms of social factors, there were many different communities along the lake, interacting with the resource in different ways. The sizes of these communities, their perceptions of the fisheries, their cultures and beliefs and the place of the fisheries resources in their livelihood all influenced the benefits derived from the fisheries differently in the different places. Their management capacity, in terms of the institutions and organisations were important factors for the sustainability of the resources. The economic conditions also varied from place to place within the ten districts along the lake. The costs of production, market prices, consumer preferences, alternative sources of income and externalities were some of the economic influences on fish production and earnings in the different area. The situation in the different districts is given in Table 5.6 below. The table shows that Jinja, Busia and Bugiri were the districts with the lowest mean monthly earnings, while Mpigi, Rakai and Kalangala had the highest. The interesting thing to note from the table is that both Jinja and Busia were in the cluster of high income districts as classified in Chapter Four, based on national data. However, with respect to fisheries incomes they fell among the poorest districts. Similarly, both Rakai and Kalangala had been classified within the low income cluster but had shown up among the highest fisheries income districts from the survey data. Kampala, by far the richest district, emerged as a medium fisheries income district here. This situation would indicate the limited extent to which the fisheries were integrated into the local economy, influencing and being influenced by the rest of the economic activities. A good example was that of Kalangala District, where the catch was often not even landed in the district but directly in Mpigi District. Many of the fishers in the district also originated from other districts, to where they 'repatriated' their earnings. Consequently, their activities had little impact on the local economy of the district.

Table 5.8: Mean Monthly Earnings of Fishing Units by District (UShs):

District	Minimum	Mean	Maximum	Valid N
Jinja	9,684	59,587	117,180	N=15
Busia	7,164	75,608	293,957	N=27
Bugiri	10,716	124,086	1,948,418	N=25
Mukono	8,250	131,072	1,429,500	N=172
Kampala	34,650	137,429	561,150	N=18
Iganga	7,530	182,881	891,600	N=62
Masaka	7,635	251,840	1,414,320	N=85
Mpigi	8,430	270,396	1,811,850	N=105
Rakai	11,400	300,960	3,214,885	N=35
Kalangala	13,680	366,256	2,007,642	N=66

Source: Survey Data

The next step in the research was to evaluate what these income estimates meant for the welfare of the fishers. To do this, reference was made to the relevant national income statistics, namely the per capita GDP and monthly household income and consumption data for the purposes of making comparison. According to official statistics, Uganda's per capita GDP at current prices for the financial year 1999/00, which was also the period for this research, was UShs 400,476. During the same period, the household monthly expenditure was UShs 141,700 with some 60% of all Ugandan households reported to have monthly incomes of less than UShs 100,000 (UBOS 2001c). In order to make comparison, the earnings from the research data were grouped into four class-ranges, namely UShs 0 to 100,000; 100,001 to 200,000; 200,001 to 300,000 and Over 300,000 and the respondents were grouped into these classes according to their incomes. This information was disaggregated for the different groups involved in fishing as summarised in Table 5.9.

Table 5.9. Income Groups for the Different Categories of Fishers (%):

	100,000 & Below	100,001 to 200,000	200,001 to 300,000	Over 300,000	Total
Average Fisher	47.0	20.7	13.1	19.2	100
<i>O. niloticus</i> Fisher	63.9	16.4	10.1	9.6	100
<i>R. argentea</i> Fisher	39.4	26.6	14.9	19.1	100
<i>L. niloticus</i> Fisher	33.2	24.6	15.0	27.2	100
Powered Canoe	16.0	18.5	13.6	51.9	100
Non-powered Canoe	48.1	21.0	14.6	16.3	100
Male Fisher	46.5	21.5	13.1	18.9	100
Female Fisher	51.7	13.3	13.3	21.7	100
Labourer: Share System	90.5	7.7	.8	1.0	100
Labourer: Flat Rate	89.8	5.9	2.7	1.6	100

Source: Survey Data

The income class of particular interest was that of UShs '100,000 and Below' as this represented the fishers living in poverty. Overall, only 49% of the fishers had monthly incomes falling in this class. This proportion was high but was still below the national situation of 60% as reported above. However, within the fishers, there were some groups that were heavily represented in this class, namely both categories of fishing labourers, fishers of *O. niloticus* and operators of non-powered canoes, both men and women being affected. The indications were that if one was operating with a powered canoe and catching *L. niloticus*, he/she would be less likely to fall into the poverty category. The same exploring was done with the ethnic groupings and with the regional distribution. The results showed that the tribes most heavily represented in the poverty class were the Samia, Basoga and the Bakenye.

Table 5.10: Income Groups of Fishers for the Different Tribes (UShs, %):

Tribe	100,000 & Below	100,001 to 200,000	200,001 to 300,000	Over 300,000	Total
Samia	72.1	16.2	8.8	2.9	100
Basoga	63.2	15.8	10.5	10.5	100
Bakenye	62.5	25.0	12.5	0.0	100
Jopadhola	57.1	14.3	14.3	14.3	100
Teso	50.0	11.1	27.8	11.1	100
Others	44.2	28.3	10.8	16.7	100
Baganda	38.1	20.3	14.5	27.1	100

Source: Survey Data

District categorisation, given in Table 5.11, revealed that Jinja, Bugiri and Busia had the highest proportions of fishers in poverty. Further explanations for these ethnic and regional performances could form part of the agenda for further research on poverty in the fisheries.

Table 5.11: Income Groups of Fishers by Districts (%):

	100,000 & Below	100,001 to 200,000	200,001 to 300,000	Over 300,000	Total
Jinja	93.3	6.7	0.0	0.0	100
Bugiri	88.0	4.0	4.0	4.0	100
Busia	77.8	7.4	14.8	0.0	100
Mukono	58.1	23.8	10.0	8.1	100
Kampala	55.6	27.8	5.5	11.1	100
Masaka	42.4	11.8	12.9	32.9	100
Iganga	38.7	29.0	17.8	14.5	100
Rakai	34.3	14.3	25.7	25.7	100
Mpigi	28.6	26.7	18.0	26.7	100
Kalangala	27.3	22.7	10.6	39.4	100

Source: Survey Data

There was a significant group of people within the fisheries involved in processing of fish using indigenous techniques. This function had been necessary to save the catch, in view of the widely scattered, distant and sometimes inaccessible landing sites where fish was landed and given the very limited use of ice. Operators serving distant inland markets also required to process their supplies to be able to deliver them in good form. Processing was also done when the market fails to absorb the fresh fish on a particular day, sometimes due to bad weather. Another reason for processing was to improve the taste of the product, particularly with respect to the juvenile *L. niloticus*. Both men and women took part in the activities as, unlike in direct fishing, women had no cultural hindrances limiting their participation in fish processing. In the research sample, out of the 126 processors interviewed, 51 of them or 40.1% were females. The main processing methods on Lake Victoria were smoking and sun-drying but there was also frying for direct consumption but this was less significant. Smoking mainly targeted *L. niloticus* and to a smaller extent *O. niloticus*. Operators of smoking units owned or hired the services of smoking kilns as their main facility and obtained firewood on the market,

supplied from nearby or even distant woodland or forest reserves. Their operators mostly bought the catch from fishers and sold to traders after processing. The research data showed that the processors who smoked their fish sold mainly to bicycle traders (47.5%, N=101), followed by truck traders operating on the domestic market (17.2%) and direct to consumers (13.1%). There were also limited cases of vertical integration, where the fishers chose to process their catch and deliver it to distant markets to get better prices than what they would have got, selling it fresh. Others did this simply because the buyers were not at the site at the time of landing, so the fish was processed while waiting for the buyers. Ordinarily traders would buy processed fish from the processors. However, they also often undertook to integrate fish processing into their activities for better returns, buying fresh catch from fishers, processing and then transporting to their market destinations. Sometimes they did this simply as they waited at the landing site for a few days to bulk enough supplies before travelling to the market. Revenues from fish processing operations were derived from the sale of finished products, less the cost of fish and expenses associated with the use of the smoking kilns, labour and purchase of firewood. One of the conceptual difficulties in estimating fish smoking profits was the loss in weight associated with the processing. It was reported that the fresh fish to smoked fish weight conversion was three-to-one. A kilogram of smoked fish would, therefore, be equivalent to three kilograms of fresh fish, a factor which needed to be considered when calculating profit margin on processed fish using buying and selling prices.

Sun-drying mainly involved *R. argentea*, although the juveniles of *L. niloticus* and *O. niloticus* had also been targeted. The *R. argentea* was spread on bare ground, preferably a rocky surface that easily heated up with the sun-shine and dried the product in one or two days. Much of the work was carried out by the operators and family members, there was much less hiring of paid labour than in the other fishery activities. The research collected data that enabled the earnings from the two main processing activities to be estimated, namely smoking and sun-drying. The results are indicated in Table 5.12 and they show that fish processors involved in smoking had higher mean monthly income (US\$ 306,413) than those involved in sun-drying (US\$ 213,589). This partly related

to the different species being handled, where smoking involved the *L. niloticus*, which was more valuable fish than *R. argentea*. The latter was also less abundant and often faced high risks of not drying but rotting, especially during the rainy seasons. With increasing use of the product in feed production, however, this was expected to change.

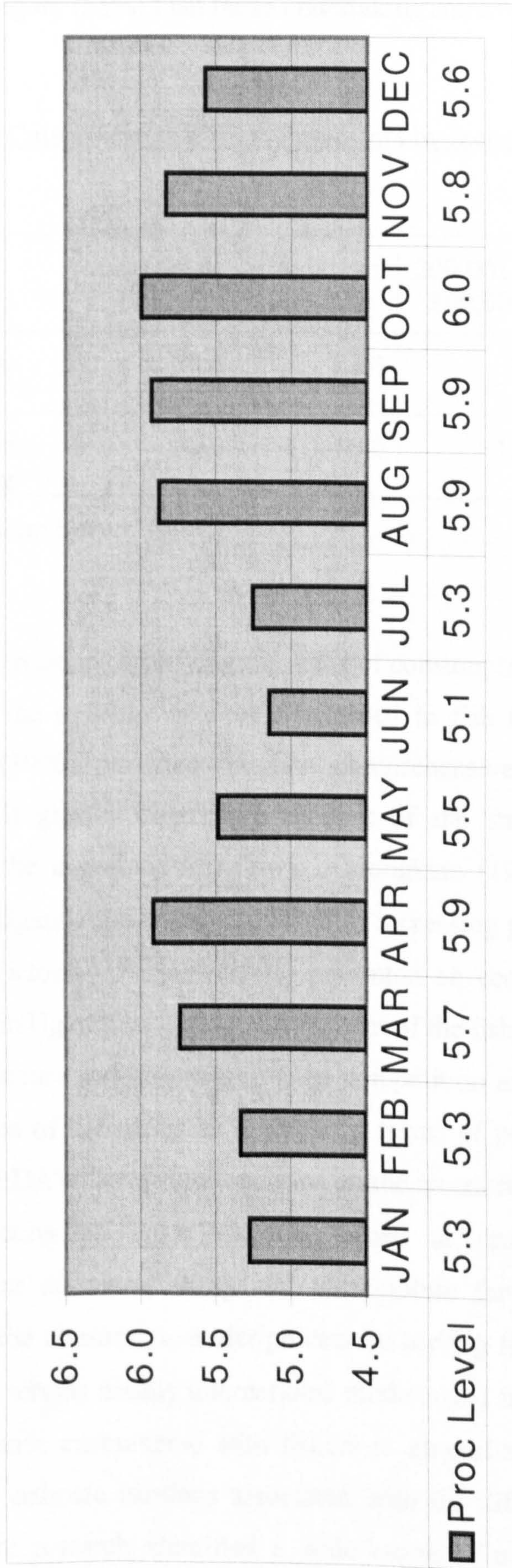
Table 5.12: Mean Monthly Earnings of Fish Processors (UShs):

	Minimum	Mean	Maximum	Valid N
Processor: Smoking	5,143	306,413	1,378,243	N=98
Processor: Sun-drying	4,286	213,589	919,929	N=20

Source: Survey Data

As stated in the section on fishers' incomes, this was a single point situation as at the time of the survey. However, processors were also able to give their perceptions of how their activities progressed through the different months of the year, using a 1 to 10 scale. This is given in Figure 5.2 and the variations were very much in consonance with those on fish catches as perceived by the fishers and presented in Figure 5.1. The figure shows two peak periods of processing activities, namely a short one early in the year during the months of March to April and a longer one later in the year from August to November.

Figure 5.2: Perceived Monthly Variations in Fish Processing Activities:



Source: Survey Data

The processors' earnings were also grouped into categories as earlier done with those of the fishers. The results showed more sun-drying processors in the poverty category (55%) than those undertaking smoking (30.9%).

Table 5.13: Categorisation of Fish Processors by Income Levels (UShs, %):

	100,000 & Below	100,001 to 200,000	200,001 to 300,000	Over 300,000	Total
Processors: Smoking	30.6	22.4	9.2	37.8	100
Processors: Sun-drying	55.0	10.0	15.0	20.0	100

Source: Survey Data

The last exercise in identifying the areas of consumption poverty in fisheries was to look at the earnings of people involved in fish trade. Kirema-Mukasa and Reynolds (1990) provided the first comprehensive fish marketing study in Uganda. It gave a descriptive account of the structure of fish marketing, indicating the important fish flows. Odongkara (1992) examined the shifting pattern of Uganda fish trade as a result of increasing production from the islands on Lake Victoria. FCSEP (1996) presented an economic perspective of fish marketing in Uganda as a major component of the fisheries sector. It analysed its market structure and the nature of the competition and how this influenced the performance of the sector as a whole in terms of prices and quantities on the market. SEDAWOG (1999a) reported on the recent regional study carried out on fish marketing on Lake Victoria, aimed at providing baseline data for management decision-making and to facilitate further research. The study examined the consumers, trader/processors serving the local markets, industrial processors serving mainly international markets and fishers. However, following the experience encountered with fishers in an earlier study, this study did not attempt to estimate earnings associated with the different marketing activities. The present research identified a wide range of traders on the lake, namely

factory agents dealing in *L. niloticus* and those dealing in *R. argentea*, bicycle traders, landing site traders, truck traders operating on the domestic market and those on the regional market, fish factory operators, boat traders and market traders. The traders obtained their supplies either directly from the fishers, from processors or from fellow traders and they in turn sold to a wide range of buyers including factory agents, factories directly, fellow traders and to consumers directly. A wide range of quantities per week handled by the different types of traders were observed. The trading assets used were mainly the fish box, bicycle and display platform while others included weighing scale, motorcycle, trucks and light trucks known as pick-ups. The main species traded included the *L. niloticus*, with average weekly quantity per trader of 199 kg, *O. niloticus* at 162 kg, *R. argentea* at 88 kg and other species at 70 kg. Women participated in the fish trade activities, particularly as market stall operators and boat traders. In the former, they were involved in obtaining supplies from truck operators and retailing them over a period. Their main asset was the stall or platform at which they displayed and sold their products. Their strength was in their retailing skills. As boat traders, they travelled to the islands and bought mainly processed fish, either smoked *L. niloticus* and *O. niloticus* or sun-dried *R. argentea* and they sold them to market stall operators at the rural as well as urban markets. In the research, it was recognised that the market traders and bicycle operators were most vulnerable to poverty among the different categories of fish traders. Consequently, the analysis focused on the earnings of these two groups of traders and the results are presented in Table 5.14

Table 5.14: Monthly Earnings of Selected Categories of Fish Traders (UShs):

Type of Trader	Minimum	Mean	Maximum	Valid N
Bicycle Trader	1,300	41,805	155,693	N=154
Market Trader	1,150	40,756	330,000	N=230

Source: Survey Data

Table 5.15: Grouping of Earnings of Selected Categories of Fish Traders (Ushs)

(%):

Type of Trader	100,000 & Below	100,001 to 200,000	200,001 to 300,000	Over 300,000	Total
Bicycle Trader	90.9	9.1	--	--	100
Market Trader	89.6	9.6	.4	.4	100

Source: Survey Data

In the next stage of the analysis of consumption poverty, the research examined what the impact of low earnings had been on the affected fishing community groups with respect to the basic essentials of life, namely food, clothing and shelter. Food still constitutes the biggest item category in household expenditure in Uganda. Out of the household monthly expenditure of US\$ 141,700 in 1999/2000, food, drink and tobacco were reported to account for a little more than 51% (UBOS 2001c). Issues of food security within farming communities usually take high priority within Governments' policies, articulating the need for crop diversification, early warning systems, food storage and distribution and even saving on incomes, among other strategies. However, little attention has been given to the concept and its application to fishing communities, like those of Lake Victoria. The scientific information on the nutritional status of fishing communities in Uganda is scanty. Even the studies addressing social and economic issues of the lake have provided limited scope for fishermen's food issues. A LVFRP study has been initiated on nutrition and it is hoped that it will provide further insights into the problem. The UPPAP consultations did not focus much on the problem of food among fishing communities, but reported: "Among the non-material indicators of poverty..... were the quantity and quality of food available in a household at different times of the year. Usually poor individuals or households with poor well-being can afford at most one meal per day" MFPED 2000d p. 18). During the research, the main problem identified with the fishers' food was lack of choice. From the Key Informant interviews held at the 75 research sites, three types of food were constantly

recurring as the main items eaten with the fish, namely cassava flour as well as the fresh cassava, maize flour and green banana, commonly known as 'matoke'. The substitute for fish reported were beans. Cassava, banana and maize were high carbohydrate food items, so from the nutritional point of view, many fishers did not have access to a balanced diet as a result of their poverty. Further problems were associated with the food emanating from the supply of food. As Table 5.16 below shows, although some of the items were grown locally, considerable proportions had to be brought in from elsewhere within the district or from outside. Trade, rather than household production, was, therefore, the main source of supply for these items. This required that adequate income be available to households to meet their food needs, which is often not the case with the poor groups. Table 5.17 gives the average distances covered for the food items supplied to the fishing communities. The table indicates that the items come from far, with implications for both costs and reliability of supply, given the poor infrastructure in some of the areas. Of the food items listed, banana is the most expensive and generally out of reach for the poor. Cassava, the cheapest and most readily available of the food items, is the most commonly consumed by the poor. However, it is said to be nutritionally very poor in terms of energy and protein content (Amann 1972).

Table 5.16: Sources of the Main Food Items to the Landing Sites (%):

Food Item	Locally Grown	Grown in the District	Obtained from Other District	Total
Cassava	66.2	13.8	20.0	100
Maize	29.0	30.7	40.3	100
Banana	45.2	19.3	35.5	100
Others	71.1	4.5	24.4	100

Source: Survey Data

Table 5.17: Distances of Food Sources from the Landing Sites (Km.):

	Minimum	Mean	Maximum	Valid N
Cassava	0	46	250	N=32
Maize	0	32	150	N=60
Banana	0	60	250	N=43
Beans	0	40	250	N=31
Others	1	74	300	N=15

Source: Survey Data

Similar situations were reported elsewhere around Lake Victoria. Abila (2000 p.15) discussed food production constraints in the lake region of Kenya, reporting that despite cassava being nutritionally very poor with respect to energy and protein, “.... ability to withstand prolonged drought makes it the dominant staple crop in these areas.” The study concluded that there was sufficient evidence that children in the lake region were among the most malnourished in Kenya, as indicated by wasting, stunting, *kwashiorkor* and *marasmus* conditions. On the Tanzanian side of the lake, a nutritional study in three districts of Mwanza Region established that there existed protein energy malnutrition around the lake region and identified the main cause to be inadequate dietary intake, both in quantitative and qualitative terms. The major underlying cause, according to the study, was the low purchasing power of poor rural families, which limited their access to most foods (TAFIRI 1998). Other poverty related food issues reported included theft of fish from other people’s nets on the lake and of crops from the gardens, attributed largely to the poor within the fishing communities.

The research also examined how consumption poverty had impacted on the clothing among fishery communities. Traditionally, clothing had not been a good indicator of poverty as fishers were generally said to be unconcerned about dressing-up well, irrespective of their incomes. However, this rapidly changed with the entry of a new generation into the fisheries and even created a new concern among the fishing communities. Excessive expenditures on fashionable clothing and hair salon services became a new dimension of wasteful utilisation

of fishery incomes, adding to the old habit of excessive alcohol among men. However, for the poor, evidence of inadequate clothing was visible. Lack of shoes was a common problem, with many fishers having to do with no more than slippers on important occasions at the landing sites. For the women and children of the poor, they would not expect any form of foot wear. Their clothes consisted of second hand garments, popularly known as 'kayembe drapers,' serving men, women and children alike. Their use was so widespread in the poverty-ridden Uganda that they were to be found on sale at every trading locality. Fresh consignments were brought in on market days, when they were spread on the open ground in large heaps. Groups of people, particularly women, would be seen spending hours searching through the heaps to see what they could pick up for themselves and for other members of the household. There were also people who could not afford even these used clothes, especially women and were thus unable to attend important public or communal activities due to lack of clothes. The old clothes have been on the market since the 1980s and have continued into the 2000s. Concerns have been raised to the effect that the import was stifling the local textile industry and was demeaning for the country as well. However, due to the widespread inability of the population to afford the new textile products, they have continued to be brought into the country in large quantities. A similar problem existed with respect to sleeping provisions. Many of the poor households did not have mattresses but made use of mats made from reeds and other dry plants. They had no access to blankets or mosquito nets in these malaria infested places but they made and maintained fires during much of the night to drive away the cold as well as the mosquitoes.

Poverty also had an impact on the accommodation used by the affected groups. In the recent participatory studies, quality of house was identified as an important indicator of wealth (Atai *et. al* 2000, MFPED 2000d, SEDAWOG 2000a). The well-to do fishers were able to buy plots of land and construct houses of bricks, cement and iron sheets. Others could rent such accommodation either at the landing sites or in the near-by centres. However, poor people were not able to afford either of these arrangements. They lived in structures with grass-thatched roof, often leaking due to insufficient grass. The wall would be made of mud and wattle or sometimes simply left open. The floor would remain of earth,

flattened and hardened a little. The woman would smear the wall and floor with dark clay from time to time to improve on the appearance, using her indigenous skills. With the increasing shortage of grass, and other construction materials within the neighbourhood, there has been a growing use of polythene sheets in the hut construction and they have proved better against leakage. A dome-shaped structure is erected by sticking twigs into the ground and bending them into shape at the top. The structure is then covered with the polythene sheets. They are handy thus very popular among the boat crew, many of whom are migratory and hardly stay long at any particular beach, but they are unsuitable for families. The accommodation for the poor was often congested, as they did not have enough money to buy or rent large plots of land to erect the structures. Many of them lacked sanitary facilities including garbage disposal sites, bathing shelters and private latrines. As a result, the places were littered with domestic wastes. People were reported to bathe and wash clothes outside or directly in the lake. With respect to toilet facilities, these were reported to be inadequate due to the unsuitable nature of the soil for their construction, lack of funds as well as space for erecting them within the landing sites. In the extreme cases of poverty, individuals went without any form of accommodation, sleeping from place to place.

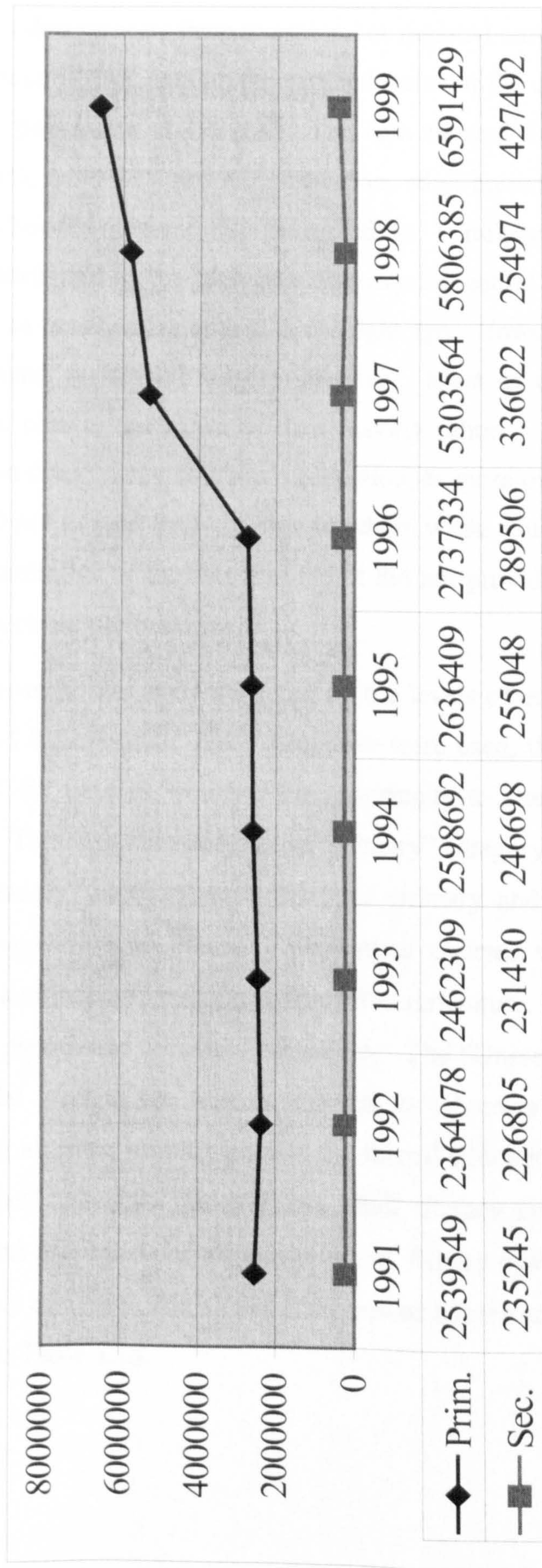
Consumption poverty was also evidenced in the lack of wealth items recognised by the communities, as discussed in Chapter Nine.

5.3 Educational Achievements

The United Nations Universal Declaration of Human Rights, in Article 26 states: “Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit. Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the

maintenance of peace. Parents have a prior right to choose the kind of education that shall be given to their children.” It had been increasingly recognised within development circles that there were two dimensions to the need for education to an individual, namely as an end in itself and as a means to better living (World Bank 2001c). Lack of achievement in education was considered a major element of the non-material dimension of poverty. Education was also considered as part of social capital, for the role it played as a tool in achieving material as well as other non-material well-being by individuals and communities as a whole. The Government of Uganda recognised this dual function of education under PEAP, as it stated: “The significance of education is that it increases incomes and economic growth and it offers an intrinsic benefit in itself” (MFPED 2000b p. 72). The two considerations had guided the policies and programs implemented by the Government as laid down in the Education Sector Investment Plan (ESIP) 1997-2003 (MFPED 1999). In this section, the thesis examined education as an element of the quality of life among fishing communities. UBOS (2000b p.25) provided national data on performance of the education sector between 1995 to 1999, covering enrolment at primary, secondary and tertiary educational levels. Primary school enrolment rose from 2,539,549 in 1991 to 6,591,429 in 1999, a rise of 160% attributed to the UPE policy. Secondary school enrolment rose from 235,245 in 1991 to 427,492 in 1999, a rise of 82%. Secondary school enrolment as a proportion of primary school enrolment ranged from 9% in 1991 to 6% in 1999, the last year for which data were available. Based on the data, comparison was made between primary and secondary school enrolment as depicted in Figure 5.3 below. The Figure shows the wide gap between the numbers entering primary school and those entering secondary education after seven years, estimated at about 30% of enrolment in primary education, depicting the large rate of early dropouts from Uganda’s educational system. The document further provided data on passes at the primary, secondary (Ordinary and Advanced) and tertiary including university levels. The data showed that for primary and secondary levels, percentages of students who passed their exams remained stable, with primary school pass ranging between 70 to 80% and secondary school rate between 70 to 90%.

Figure 5.3: Enrolment in Primary and Secondary Education for Uganda, 1991 – 1999:



Source: UBOS 2000b p.27

While the data gave an overall picture of how the education sector performed, they did not disaggregate them to sectoral or regional components. (UBOS 2001c p.15) provided further data on the national status of the educational achievement among the population in 1999/00. The data showed that the literacy rate had risen to 65%, from 63% in 1997. However, adult literacy was only 63%. Total primary school enrolment had increased to 7 million, from 3.6 million in 1994/95, attributed to the Universal Primary Education policy. Children were also found to be attending school at the right age. However, most rural children did not attend pre-school nursery sessions. Most of the dropouts mentioned educational cost as the cause of their leaving school. Parents' education was important in determining children's education, as more of the uneducated parents were found not to send their children to school while educated parents did. Once again the limitation of the data was that it did not provide a breakdown showing details of sectoral performance.

On this research, data were collected on the levels of education attained by the operators of fishery units. Five categories were used, the first was that of "No schooling," for persons who had no opportunity to attend any form of formal education. This was followed by the "Primary" category, which ran for 7 years. The "Secondary" category included both ordinary and advanced level school certificate, covering six years. Subsequent courses were categorised under "Tertiary" and included training colleges for agriculture, fisheries, education, co-operatives, health and technical education. The "University" category was for persons who went to the various universities wherever and in whatever field. People who attended training outside the formal education system were grouped under "Other" category, for example adult literacy courses. The data were analysed and presented for all categories of fishery operators as "General" and subsequently disaggregated by sex and types of fishery activity. The findings are presented in Table 5.18.

Table 5.18: Levels of Education of Fishery Unit Operators by Category (%)

Group	Level of Education								Total
	No Schooling	Primary	Secondary	Tertiary	University	Others			
General	11.1	63.4	23.4	1.9	0.1	0.1			100
Men	10.2	63.1	24.5	2.1	0.1	0.0			100
Women	13.9	64.5	20.1	0.9	0.0	0.6			100
Fishers	11.6	63.3	22.5	2.5	0.1	0.0			100
Fish Processors	16.5	63.00	19.7	0.8	0.0	0.0			100
Fish Traders	9.2	63.8	25.6	1.0	0.4	0.0			100
Factory Agents	14.3	71.4	0.0	14.3	0.0	0.0			100

Source: Survey Data

The findings showed a generally similar pattern between the different groups within the fishing communities. Literacy was one of the concerns of the study, defined by the Government as “the ability to read with understanding and write meaningfully” (UBOS 2001c p. 15). This was expected to be achieved after completing three grades of formal primary education. To assess the level of literacy within the fishery, the “Primary” category was used as the lowest and all persons falling in it and in higher categories were considered literate. The figures showed that about 88.9% (N=1,399) of the owners of fishery units were literate. This was above both the national rural adult average of 59% and the overall national rate of 65% for the same period (UBOS 2001c p.16). However, it should be noted that owners of the production units were not necessarily representative of the fishing communities as labourers would be expected to be less educated. The data showed that the local fish processors had the highest rate of “No schooling,” followed by factory agents and then women. At the other end, factory agents had the highest proportion of tertiary level education (14.3%), followed by fishers (2.4%), both above the general proportion of (1.9%). There were also marginal cases of university education within the various groups. The data were further disaggregated along tribes to obtain variations based on ethnic background, as presented in Table 5.19. In that respect, the Baganda had the smallest proportion in the “No schooling” category (6.5%), lower than the “General” fishery operators. All the other tribes were above, with the highest being the Jopadhola (30.6%), Bakenye (29.2%), Basamia (18.8%) and Iteso (17.9%).

Table 5.19: Levels of Education of Fishery Unit Operators by Tribe (%):

Tribe	Level of Education							Total
	No Schooling	Primary	Secondary	Tertiary	University	Others		
Iteso	17.9	64.1	15.4	0.0	0.0	2.6	100	
Baganda	6.5	67.5	23.9	2.1	0.0	0.0	100	
Basamia	18.8	53.5	27.7	0.0	0.0	0.0	100	
Basoga	14.7	64.7	19.3	1.3	0.0	0.0	100	
Bakenye	29.2	54.2	16.6	0.0	0.0	0.0	100	
Jopadhola	30.6	44.4	19.4	5.6	0.0	0.0	100	
Others	13.0	59.2	24.5	2.5	0.4	0.4	100	

Source: Survey Data

A regional breakdown of the data by district was also undertaken, as presented in Table 5.20. The table showed that the districts with the highest proportion of “No schooling” were Iganga (24.5%), Busia (19.7%) Mukono (15.3%), Jinja (13.3%) and Bugiri (13.0%).

In Uganda there was no known level of achievement in education below which one would be said to be poor. The Uganda educational system provided education in general fields at two levels, namely the primary and secondary school. In the subsequent stages, namely the tertiary and university levels, there was specialisation and focussing of education towards providing knowledge and skills in defined areas, mainly for productive purposes. Apart from preparing people for the specialised education, much of the general education up to the secondary level was for its direct consumption value. This value went far beyond literacy and included the capability of the individual to appreciate wide-ranging issues of social, economic, environmental and technological developments within his/her neighbourhood and beyond. It required that the individual’s knowledge base be expanded; capacity to conceptualise issues built and the tools to analyse situations adequately developed. The thesis has argued that this intrinsic value of education was not adequately achieved at the primary school level, where the knowledge and analytical tools provided were elementary and limited in scope. It was the secondary education that prepared one to effectively appreciate and feel part of society and the world at large. On the basis of this approach, it could be assumed that persons with “Primary” level of education and below were living in ‘education poverty.’ Overall, therefore, some 74.5% of the fishery unit operators under the survey could be said to be living in education poverty.

Table 5.20: Levels of Education of Fishery Unit Operators by District (%):

District	Level of Education							Total
	No Schooling	Primary	Secondary	Tertiary	University	Others		
Busia	19.7	54.1	26.2	0.0	0.0	0.0	100.0	
Bugiri	13.0	59.3	27.7	0.0	0.0	0.0	100.0	
Iganga	24.5	59.4	14.2	1.9	0.0	0.0	100.0	
Jinja	13.3	53.3	33.4	0.0	0.0	0.0	100.0	
Mukono	15.3	61.1	21.0	2.3	0.3	0.0	100.0	
Kampala	7.7	59.5	31.2	1.0	0.0	0.6	100.0	
Mpigi	3.0	69.3	24.7	3.0	0.0	0.0	100.0	
Masaka	6.8	72.7	18.6	1.9	0.0	0.0	100.0	
Rakai	3.7	85.2	11.1	0.0	0.0	0.0	100.0	
Kalangala	5.7	63.2	26.4	4.7	0.0	0.0	100.0	

Source: Survey Data

5.4 Health Achievements

The definition of health by the World Health Organisation (WHO) reads: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” The Organisation has been behind the “Health for All” movement, born as a result of the unanimous adoption of the Global Strategy for Health for All by the Year 2000 at the 1981 World Health Assembly. The movement had its roots in the 1977 Assembly which decided that the major social goal of governments and WHO should be “the attainment by all people of the world of a level of health that would permit them to lead a socially and economically productive life” (WHO 1999). In 1994, the Member States had recognised that global changes had occurred that were calling for a review of the strategy to meet new challenges, exploit opportunities and overcome obstacles at the dawn of the 21st century. Recently, the international community set for itself the International Development Goals (IDG) for the period up to 2015, following discussions at various United Nations conferences (DFID 2000). IDG provided for the main health achievement targets, namely reducing by two-thirds the mortality rates for infants and children under 5; by three-fourths the mortality rates for mothers between 1990 and 2015 and providing access to reproductive health services for all individuals of appropriate age by 2015. (World Bank 2001a p. 23). On the domestic scene, the overall objective of the Government of Uganda Health Sector Strategic Plan (2000-2005) was to reduce morbidity and mortality from major causes of ill-health and the disparities therein, as a contribution to poverty eradication and economic and social development. The plan had been prepared under the framework of PEAP.

Health was also examined in this section as an element of the quality of life in the fisheries. Statistics on the health status showed that for Uganda as a whole, the per capita attendance for Out Patients Department (OPD) fell from 0.6 in 1997 to 0.4 in 1999. This parameter was a measure of the total number of OPD attendance divided by the total population of the area. It was one of the indicators of morbidity, a concept defined as the rate at which people fell sick. Malaria was recorded as having the highest prevalence rates among the out patients from 1995 to 1999, followed by Acute Respiratory Infection (not pneumonia), among other diseases. The cumulative reported AIDS cases

stabilised in the 1994 to 1998 period between 46,120 and 54,712 respectively. The figures were, however, said not to represent the true situation because not all the cases were reported. Over 500,000 people were said to have died of AIDS in Uganda so far and some 2 million people carrying the HIV virus. Reported annual cases of Tuberculosis (TB) stabilised at 26,648 in 1994 and 26,670 in 1998, the high rates being attributed to the HIV/AIDS infection (UBOS 2000b p. 61). During the UPPAP consultations, illness was recognised as a form of poverty by the fishing communities. Among the main non-material forms of poverty “poor health” and “having AIDS” were reported by the men groups, the latter also recognised by the women groups, during the PRA exercises (MFPED 2000d p. 17). According to the consultations, AIDS among the two fishing communities was attributed to the ignorance on the various aspects of the disease and the influx of people to the landing sites during peak fishing seasons. “There are observable clinically defined cases; people with skin rashes, the constant cough and people with emaciated bodies. The people who came with the population floods were mostly sick” (MFPED 2000d p. 67).

During the research for this thesis, the key informants were asked to say in the order of significance the three main diseases affecting their communities. Using the Multiple Response Analysis, the responses were examined and the results were given in Table 5.21.

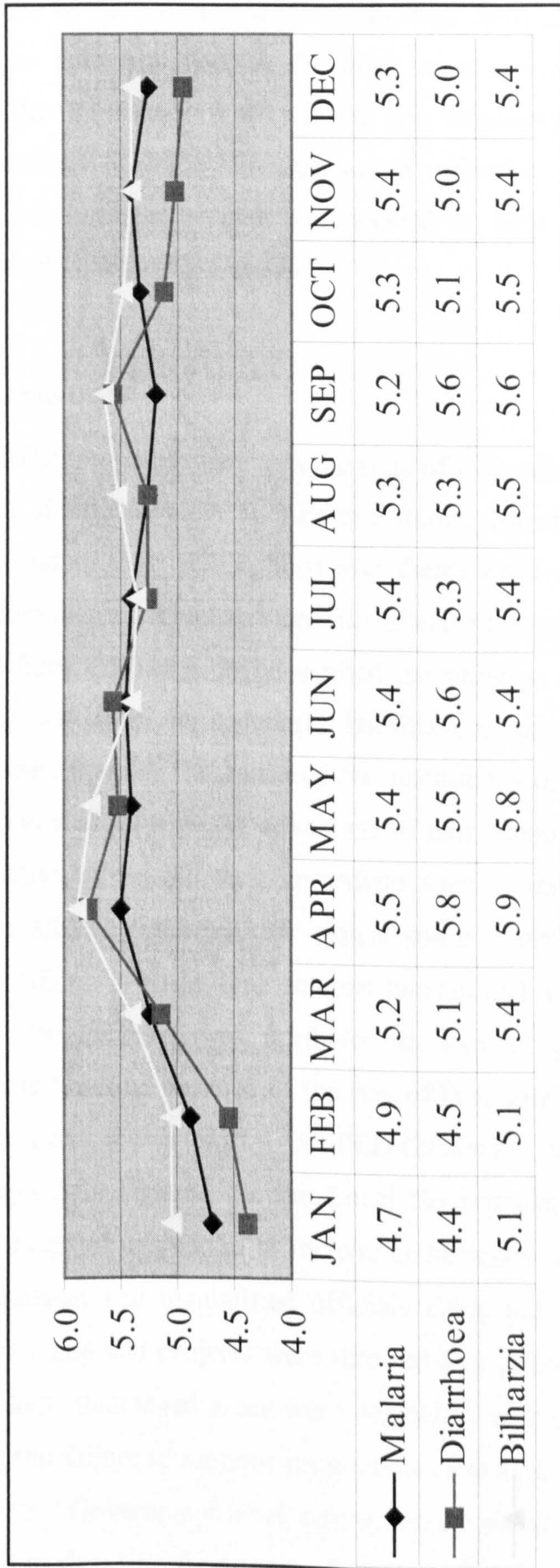
Table 5.21: Multiple Response Frequencies of the Main Diseases Reported at the Landing Sites:

Type of Disease	Count	Pct of Responses
Malaria	69	46.9
Diarrhoea	39	26.5
Bilharzia	14	9.5
Skin infection	5	3.4
Measles	6	4.1
Typhoid	1	.7
Cholera	3	2.0
Chest infection	3	2.0
Others	7	4.9
Total Responses	147	100.0

Source: Survey Data

Table 5.21 shows that taking the entire Ugandan lake region, malaria was still the most common reported disease at the landing sites, followed by diarrhoea and bilharzia. Other diseases included skin infections, measles, typhoid, cholera and chest infection. To get indications of the spread of the main diseases over the year, the key informants were asked to rate their occurrence during each month, using a 1 to 10 scale. Their responses were summarised in Figure 5.4.

Figure 5.4: Reported Prevalence of Malaria, Diarrhoea and Bilharzia During the Months of the Year:



Source: Survey Data

Figure 5.4 shows that malaria and diarrhoea occurred throughout the year, with peak periods in April and September. Bilharzia was a disease that could be contracted any time of the year and tended to be even throughout the year. The important thing to note was that all the three most common diseases were controllable at the household level, given the necessary knowledge and resources. Persistence of these diseases was a reflection of poverty in the communities. This information was also viewed in light of the nutritional limitations described in section 5.1 above.

5.5 Sense of Insecurity

Another non-material type of poverty was the state of insecurity suffered by poor people as a result of their inability to influence things that affected them. The individuals were said to have little control over their own lives as well as over public policies, administration and services that affected them (MFPED 2000b p. 81). The World Bank (2001c p. 35) described the situation as follows: “This helplessness subjects them to rudeness, humiliation, shame and inhuman treatment, and exploitation at the hands of the institutions of state and society They are prevented from taking advantage of new economic opportunities, or engaging in activities outside their immediate zone of security. Threats of physical force or arbitrary, bureaucratic power make it difficult for them to engage in public affairs, to make their interest known, and to have them taken into account.” The situation was attributed to lack of good governance, characterised by inefficiency, absence of the rule of law, corruption and general lack of transparency and accountability. MFPED (2000c p. 108) summarised the features of corruption in Uganda. At the Local Government level, the report identified the elements of corruption to include embezzlement, nepotism which resulted in incompetent and unqualified officials being put in place; location favouritism where funds and projects were directed to a politician’s constituent area while other less advantaged areas were neglected; lack of transparency in awarding tenders and failure to monitor programmes and seek accountability for funds. At the Central Government level, corruption consisted of involvement in foreign wars, seen as directing funds away from service delivery improvements;

district favouritism particularly in the South over the North; failure to deal with corrupt officials when they were found guilty and lack of electoral transparency involving false and misleading electoral promises, lack of accountability to the electorate and lack of information after elections.

The issue of insecurity among fishers was probed during the research and much of it was found to be at the local level within the communities. One of the most commonly reported was lack of job security among fishing labourers. This was attributed first to the lack of clear labour laws in the country that would govern the hiring of such workers. This situation was not only exploited by employers in fisheries but in many other fields as well. Furthermore, the contracts under the artisanal fishery enterprises were informal and provided for virtually no conditions under which the boat labourers would be hired and fired. The large numbers of labourers seeking work at the landing sites also made their replacement easy. During the research, it was reported that the main reasons for terminating a labourer's work included theft of fish, going to the lake while drunk and fighting on the lake. However, the dismissals were usually effected without any convincing attempts to prove guilt. The helplessness of the workers was demonstrated in the absence of any provisions for appeal to the LMC, the LC1 or any other landing site authorities, which they could pursue, nor was any compensation paid to them. The mode of payment to labourers by proportion of catch effectively meant that the workers were on day-to-day contracts, making it easy for the owners of units to replace them any day without notice. The problem of lack of job security also applied to the different categories of workers at the landing sites, including bar and restaurant attendants and workers at the smoking kilns.

Discrimination of other forms was also a type of insecurity. These were reported to be based on nationality, tribal, wealth status and gender. At most of the landing sites there were people from the neighbouring countries as well as the different tribes within Uganda. It was clear that the non-Ugandans were allowed little participation in decision making in the fisheries. They could speak at meetings but rarely held positions on the LMC, LC1 and other institutions within the landing sites. The Uganda Constitution was used to limit their full participation in the country. However, a similar and even worse treatment was

often given to migrants from tribes within Uganda by the dominant tribes. Although formally there were no restrictions, the ethnic minorities rarely held positions of responsibility at the landing sites. Furthermore, they were frequently accused of being the worst violators of fisheries regulations. A participant at a LVEMP workshop said, "Most foreigners commit lots of malpractice. We the Ssesse and Baganda people since 1958 used to be very good fishermen, using recommended gears with no malpractice, but when foreigners from Lakes Albert and Kyoga migrated to Lake Victoria, bad fishing methods, use of illegal gears and malpractice increased. Fisheries Officers are also defeated in controlling these foreigners on the lake" (LVEMP 2000 p. 15). The affected individuals found such generalisations extremely intimidating and threatening. As a result they often shied away from attending meetings and workshops for fear of being singled out for attack. Furthermore, with such sentiments around them, they could not aspire for leadership positions within the fishing communities. Besides that, they were given low preference as workers on the *L. niloticus* boats, compared to the sons of the major tribe, which partly explained why they largely remained in illegal fishing methods like cast netting. With time, many of their children were given the same tribal names as the rest of the major tribe, "to avoid being victimised" (Kiiza 2000). Discrimination also applied to poor people. Ownership of productive and wealth items was an important consideration for one to have a voice in the community. There was an "unwritten law" that one who had nothing should not influence the decisions of the community. A common statement heard at the landing sites was "Can he also talk? What does he have?" The reasoning was that one who had no assets had nothing at stake at the landing site, so if he/she caused a wrong decision to be made, it would be only others to lose. Poor people, therefore, felt intimidated to speak at meetings and workshops and they were rarely elected to the post of chairperson for LMC or LC1. In the case of women, it was a combination of ethnicity, culture and poverty, re-enforcing each other against them. Women who were wives of fishermen, by the fact that they originated from other clans and only came in through marriage, were still largely considered foreigners and were not expected to have a major say in the affairs of the village. From another perspective, women were culturally said to be inferior to men, implying that they could not participate at equal levels with men on matters that affected the communities.

The argument was taken a step further that since women were not allowed to fish, there was little they were expected to contribute towards fishery issues. Lastly, because they were generally poorer than men, they could not be listened to or accepted to lead, just like other poor people. The impact of all this was that the women felt intimidated in the communities and the few who tried to make a break through were subjected to resistance and humiliation.

Violence was identified as another security concern among certain members of fishing communities. Many individuals at the landing sites were prone to physical attacks due to a combination of the large number of youths, many of them undisciplined at the sites, high consumption of alcohol and poor law enforcement machinery with respect to the crime. (Atai *et. al.* 2000 p.141) reported that at Nkombe Landing Site, fighting was one of the crimes of concern to the community and depending on its gravity, it would be handled by the beach leader, the LC1 or the police. A special category of violence was the domestic violence, common within the general Uganda society, fisheries being no exception. The UPPAP consultations referred to it as “wife battering and harassment” and gave a vivid analysis of its causes, effects and possible remedies (MFPED 2000c p.126). Among the factors identified in the report were poverty, lack of co-operation in the homes and failure by local leaders to respond to the outcry related to domestic issues. Within the fishing communities, wife beating and expulsion and sexual abuse were common. It was reported that when such a case was reported to the LC1, it was usually played down, the victim advised to exercise patience and eventually it was overtaken by other more pressing events and forgotten. Men, who dominated the leadership of the local institutions, seemed to protect their fellow men that were offenders in domestic violence and sexual abuse cases.

With respect to Government institutions, much was reported about the corruption of the Fisheries Officers. Intimidation and extortion of varying sums of money from offenders of fisheries regulations was widely reported during the research. Collection of contributions from the fishing units for the purpose of “hosting visitors to the landing site” had become too frequent, even though the visitors had their own budgets. Among the other departments, tax collection was said to be a humiliating exercise, involving chasing of individuals into the shoreline

swamps by the authorities. As some fishers, especially in Busia, Bugiri Iganga and Mukono District were also involved in cross-border trade, delivering their catch to Kenyan beaches, the Revenue Protection Unit, an armed organ supporting the Uganda Revenue Authority, operated on the lake and was often said to harass travellers on the lake, including fishers. There was also concern that fishing communities were not getting a fair share of development. Although landing sites were among the highest revenue generating centres in the district, very little was reported to be ploughed back in terms of facilities and services. Fishing communities were marginalised as their public image was that of disorganised and backward people. They did not have strong political representation at higher levels, as their area members of parliament (MPs) rarely came from fishing background. Most landing sites were isolated, situated far from the district headquarters and in places that were often difficult to access. The point was made by a community leader, talking about district officials who had the responsibility to provide services to the landing site: “The only time we see these people is when they have come to pick up their revenue.” (Ngundu 2000).

5.6 Exposure to Risks

Another non-material form of poverty among fishing communities was the considerable exposure to risk that many of their members frequently found themselves in. This element of poverty included “the risk that a household or individual will experience an episode of income or health poverty over time. But vulnerability also means the probability of being exposed to a number of other risks (violence, crime, natural disasters, being pulled out of school)” (World Bank 2001c p.19). In fisheries the risk took many forms and was experienced mainly at three levels, namely at the production, marketing and personal level. At the production level, the livelihood of the fishing communities were threatened first by degradation of the fisheries resource base, resulting in decline in fish catch over the years. In the research, respondents involved in fish production were asked to name the first and second most limiting factors to their activities. Using Multiple Response frequency analysis, fish scarcity was identified by 31.5% of fishing respondents as their most limiting factor, second

only to gear limitation (34.8%). The position was re-enforced by the catch statistics for the lake during the 1990s as given in Table 5.22.

Table 5.22: Fish Catch for Lake Victoria: 1990 - 1999 (000 tonnes):

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Catch	119.9	124.7	129.7	134.9	103	103	106.4	106.6	105.2	111.4

Source: DFR 2000

Table 5.22 shows that there was an episode in 1994, when the catch fell to 103,000 tonnes from, 134,900 the previous year. This decline would have caused a shock in the incomes of fishers. The level did not begin to pick up until 1999. Resource decline could also take the form of species reduction. Lake Victoria has been a known example of this, where the haplochromines, once forming about 80% of the lake biomass (Kudhongania and Cordone 1974), virtually disappeared from the commercial catch. Over 200 indigenous species were said to face possible extinction due to these factors (LVEMP 2001). The resource degradation factor is discussed in further detail in Chapter Eight. However, it is noted here that there was a declining trend in fish availability, attributed to natural as well as man-made causes. First, the introduction of *L. niloticus* as an exotic species some 30 years earlier was said to have altered the food web structure in the lake. Secondly, the massive nutrient inputs from the adjoining catchment of the lake caused eutrophication, leading to oxygen depletion at lower depths of the lake and threatening the artisanal fisheries. Water hyacinth (*Eichhornia crassipes*), a flowering plant whose origin was thought to be the Amazon region of Brazil was another threat to the fisheries resource base. Its first recorded appearance in Lake Victoria was in Ugandan waters in 1988, thereafter spreading rapidly and covering much of the sheltered bays. Its high concentration in Ugandan waters had been attributed to the southerly winds that blew mats of the weed from the mouth of the Kagera River, down which it flowed from Rwanda and Burundi. The hyacinth was also said to flourish in nutrient-rich waters. Its main detrimental effects were a reduction in fish in the lake through de-oxygenation of water and reduction of nutrients in

sheltered bays which were breeding and nursery grounds for fish, particularly *O. niloticus*. It also presented physical interference with fishing operations, especially in the bays where fish was brought ashore to piers or landing sites. Human activities were also said to be responsible for fisheries resource decline. First, nutrients were released from soil particles, washed or blown off the land surface by erosion and by burning wood-fuels into the lake. Secondly, improper disposal of human and animal waste from areas surrounding the lake as well as untreated sewage from the urban areas were another source of pollution. Thirdly, certain industries, namely, breweries, tanning, fish processing, agro-processing particularly sugar and coffee, and abattoirs caused pollution of the lake. Another important type of human activities involved overfishing and catching of immature fish. SEDAWOG (2000b) examined the perceptions of resource change among fishers and reported similar results, indicating that for Uganda, the majority of fishers felt that there was less fish in 1999 than in 1995 (86%, N=339). They also felt that they spent more time catching the same amount of fish now than they did five years ago (79%, N=342) and they largely agreed that the species diversity had declined since 1995 (91%, N=342). Participatory consultations further confirmed the position. Communities in Kalangala District reported dwindling fish stocks and species varieties, especially in the 1990s, with severe socio-economic implications (MFPED 2000d).

Apart from the trend towards fisheries resource degradation, there were also seasonal variations in fish availability. As indicated in Figure 5.1 above, the months of May to July and December to February were reported to be of low catch. MFPED (2000d) attributed the seasonal variations in fish catch to changes in winds, sunshine and rainfall and reported that the level of fish yields determined the level of employment, commerce and social life in the fishing villages. The report reads: "... in periods of high fish catches, fishermen are relatively rich and spend plenty of money on alcohol On the converse, at times of low catch, ...they cannot afford to pay for their basic necessities and the little money they have is spent on alcohol. During this period, there are a lot of social disputes, particularly wife-beating" (MFPED 2000d p. 42).

The risk was also often due to an episode on the fish market, leading to a collapse in demand and fish prices with poverty consequences. Among the

recent cases of market collapse, the first occurred at the height of the “Rwanda genocide” in 1995, when bodies of victims floated down River Kagera into Lake Victoria and consumers were not prepared to accept fish from the lake. For a period of about six months, fishers had the difficult task of finding alternative livelihood sources outside the fishery, like trading and providing casual labour. In 1999 at the peak of “fish poisoning” the population again placed an embargo on fish consumption, which was followed by a ban on fishing activities for one full month while a solution to the problem was being sought. Although the restriction on fishing was lifted following agreement on a number of measures, the ban on the fish export to the EU market remained in place for 18 months. During this period, the average fish price at the landing sites was down to US\$ 700, instead of the usual 1,500 per kg for *L. niloticus*. The communities had, therefore, fallen victim of the situation. Those were major events on the lake. Local and less dramatic market failures, however, occurred on a more frequent basis. Examples included the fisherman on any of the remote islands, whose collecting boat would fail any day to come for his catch due to bad weather. Even when the boat came, on many occasions he was not paid for his delivery. Non-payment for deliveries was experienced by many operators in the fisheries and was a major concern widely raised during the research. Agents who delivered supplies to processing plants were often not paid due to events reported to have occurred on the EU market. This in turn meant that the fishers could not be paid. Even on the local market, traders often took supplies from fishers on the understanding that they would pay after sale but often failed to pay. Reasons advanced included late arrival at the market, heavy rains that spoiled the open air market and lack of customers at the market. The risk that the *R. argentea* processor could lose his/her fish due to rain before it dried was poverty.

Further risk at the production stage was also associated with theft of gear and of catch. On the research, respondents were asked to name what they considered as the main threats to their operations. The responses, as summarised in Table 5.23 showed that theft of gear was the most significant. Reported by 59% of fishers and 71.4% of factory agents in the sample, it represented the biggest threat to fishery activities. However, Table 5.23 shows that the threats and risks for fish processors and traders were different from those of the fishers and factory agents,

given by the large proportions of 'others'. These included unpredictable market caused by irregular supplies or customers, leading to loss of capital; over-taxation that diminished profits; transport failures to deliver fish on time; muddy market that discouraged customers from coming to the fish stands and rains that kept customers indoors.

Fishers have responded to the threat of gear theft through innovation in fishing gear and methods. The increasingly smaller fleets of gill net, used in active fishing and carried away at the end of the day were meant to safeguard against theft. Many LMCs also undertook registration of all gear at their landing sites to control the use of stolen gear. Furthermore, bye-laws were instituted within communities setting time-limits within which to go into and out of the lake for fishing, aimed at controlling theft of catch. At many places, it was also illegal for the crew to sell fish out on the lake, as this could encourage theft of catch from the employer's nets or of other people.

Fishery risk did not only prevail with respect to the activities, namely production and marketing as described above, but also to the personal safety of the individual during the course of work. The constant threat under which the fishery operators worked was a form of poverty, as it affected the quality of life they lived. Infections by any of the prevalent diseases, namely malaria, diarrhea, bilharzia and HIV/AIDS did not only cause pain and suffering to the individual but often resulted in financial costs and interruption of work, leading to further poverty. Attacks by wild animals on the lake, boat accidents due to strong winds and lightning were all likely to lead to death, causing poverty to the remaining household members.

Table 5.23: Main Threats to Fishery Activities (%):

	Theft	Drowning	Wild Animals	Moonlight	Others	None	Total
Fishers	59.2	7.7	8.7	5.8	12.8	5.8	100
Factory Agents	71.4	0.0	0.0	14.3	14.3	0.0	100
Fish Processors	7.5	0.9	1.0	16.0	42.5	32.1	100
Fish Traders	10.3	1.7	1.3	15.1	51.1	20.5	100

Source: Survey Data

World Bank (2001 p.20) described some of the options for links to informal networks and formal safety nets that would minimise the impact of the risk events on a household. They included the household's physical assets that could be sold to make up for temporary loss of income; human capital in the form of education that could be useful in managing credit and in securing additional income sources for the household and diversification into low risk income activities to lessen the vulnerability of the household. It could also participate in links to groups that provide credit or support in case of a catastrophe; participation in the formal safety nets leading to entitlement to social assistance, unemployment benefits, pensions and insurance and finally gain access to credit markets that would reduce its vulnerability by enabling it to obtain credit for consumption during difficult times.

5.7 Conclusion

The objective of the chapter was to identify the types of poverty prevailing within the fisheries and make poverty profiles for the different groups of people and geographical regions on Lake Victoria. The dimensions of poverty used included inadequate consumption, lack of achievement in education and health, sense of insecurity and exposure to risk

The national official data on poverty by income activities of the heads of household showed that poverty, measured by the headcount index, declined from 55.5% in 1992/93 to 35.2% in 1999/00. Fisheries were included under the 'Non-crop agriculture' sector, where poverty fell from 52.8% to 41.4% during the same period.

Monthly earnings of the different types of fishery units were calculated, based on data on their capital, operating costs and revenues. The data showed that based on the target species fished, the mean monthly earnings in US\$ were highest for a *L. niloticus* fisher (279,473), followed by *R. argentea* (207,743) and *O. niloticus* fishers (129,278). The estimates should be seen against the background of the national per household monthly income of 141,000 (UBOS 2001c p. 48). The export market for *L. niloticus*, which resulted in high prices, could account for the high earnings. Similarly, the growing utilisation of *R. argentea* by animal

feed millers had strengthened the market for the fish. *O. niloticus*, however, was landed mainly for the domestic market, where prices were low due to poverty among the consumers.

The mean earning of a fisher using motorised boat (436,530) was higher than that of non-motorised boat (187,223), due to the capacity of the former to reach distant fishing grounds with less competition and to carry more nets, thus operate on a larger scale. It was also found out that a fisher who operated with own boat earned (229,497) more than one who rented one for his activities (113,043).

The mean earnings between fishers of different sexes were not found to be much different, namely a man (208,891) and a woman (200,137). Earnings of labourers under different remuneration systems were examined and the one on fixed rate per time-period earned more (86,867) than the one on proportional share system (35,056). Considering the ethnicity of the fishers, the one from the Baganda earned highest (271,208) while the one from the Basamia was lowest (89,191). Regional differences were also observed, with fishers from Jinja, Busia and Bugiri Districts earning lower than those from Kalangala, Rakai and Mpigi.

Different poverty lines had been prepared in Uganda as given in Table 5.1. However, official statistics used the sum of US\$ 100,000 per month per household as the average poverty line and found out that 60% of the population earned below that (UBOS 2001c p. 49). Based on the grouping of fishers by earnings, 47% of them earned 100,000 and below. Labourers on share system (90.5%) and those on flat rates (89.8%) had the highest proportions of fishers in this category, followed by fishers of *O. niloticus* (63.9%) and operators with non-powered canoes (48.1%). Powered-canoes operators were the least in this category (16.0%). On the basis of ethnicity, the Basamia (72.1%), Basoga (63.2%) and the Bakenye (62.5%) were the largest tribes within 100,000 and below category while the Baganda (38.2), Teso (50.0%) and Japadhola (57.1%) had lower proportions within the class. The districts of Jinja, Bugiri and Busia had higher proportions of their fishers in the income class of 100,000 and below while Kalangala, Mpigi and Rakai had lower proportions.

A similar set of analysis was done with artisanal fish processors and traders. Processors involved in fish smoking earned a mean of 306,413 which was higher than that of those in sun-drying (213,589). Similarly, processors in smoking were fewer (30.6%) in the 100,000 and below income group than those in sun-drying (55.0%). Among the fish traders, bicycle traders earned a mean of 41,805 with 90.9% of them in the poverty category while market traders earned a similar amount of 40,756 with 89.6% in the poverty category.

As a result of the low incomes of many of the fishery operators, their food was also inadequate, consisting mainly of cassava, which was nutritionally poor in terms of energy and protein content. Other food items included maize flour, banana and beans, apart from fish. Clothing, shoes and blankets were also lacking. The poor people lacked permanent houses, living under simple structures that lacked warmth and sometimes sanitation.

Educational achievements were examined as the next type of poverty. At the national level, Uganda was implementing the Universal Primary Education, a comprehensive strategy introduced in 1994/95 aimed at improving primary education and enhancing poverty alleviation. As a result, enrolment into primary education had risen since 1996. The national literacy rate was reported at 65% during 1999/00 (UBOS 2001c p. 15). The research data also showed that 63.4% of the fishery operators had attended primary education. Generally, the levels of education were comparable between the different groups in the fisheries. From the ethnic distribution, Baganda (67.5%), Basoga (64.7) and Iteso (64.1%) were the leading tribes with primary education and the districts of Rakai (85.2%), Masaka (72.7%) and Mpigi (69.3%) were leading. Some 11.1% of the respondents reported having had no schooling. However, it was noted that post primary education was limited, with only 25.5% of the respondents reporting reaching secondary level and above. On the research, secondary schooling was considered necessary to provide the value of education required for life. On the basis of that, some 74.5% of the respondents had not achieved sufficient education and were, therefore, living in education poverty.

Health issues were examined as an element of the quality of life. Uganda formulated a health sector policy with the overall goal of attainment of a good standard of health by all people for a productive life. Its main objective was to

reduce mortality and morbidity among the people. The strategies emphasised primary health-care and provision of health services.

Concerns were, however, widely raised with respect to ill-health among the fishing communities. The main diseases reported were malaria, diarrhoea, bilharzia and HIV/AIDS. However, all these disease were said to be controllable at the household level, given the necessary knowledge and resources. Their persistence was, therefore, a reflection of poverty in the individuals affected and the community at large. The situation was made worse by the low nutritional value of their diet and the limited access to the health services. It was, therefore, noted that there were many people within the fisheries who had not achieved good health.

The research examined situations which created a sense of insecurity among the fishing people. Certain types of insecurity were noted to originate from the fishing communities themselves. Job insecurity among the fishing labourers was often created by the owners of the fishery units. Discrimination in the affairs of the landing sites against foreigners, tribal minorities, women and poor people was common. Violence was often meted to the weak and particularly the women. The women also suffered sexual abuse, for which they could not get adequate redress, due to discrimination and favouritism among the leadership of the communities. A sense of insecurity also originated from the malpractice of Government officials, like taking of bribe in the course of providing services or law enforcement. Fishing communities were generally given a low opinion and marginalised by Government officials, a situation made worse by their remote locations, limited education and poor access.

Many fishers also lived in a state of risk of experiencing an episode of income or health poverty any time. A wide range of risks and threats were identified, including, failure of catch, theft of gear, boat and vehicle accidents, non-payment for catch deliveries, risk of infections, failure of market or ban on fish export, all of which had implications on the income or health of the fishery operators. The main concern was that there were no strong provisions in place to enable the poor to respond to such episodes, either from Government, the communities or the individuals affected. The chapter, has therefore, been able to respond to the research questions.

CHAPTER SIX

THE INSTITUTIONAL AND SOCIAL ENVIRONMENT

“The only time we see these people is when they have come to pick up their revenue.” This was how a fisherman summed up their relationship with Local Government.

6.1 Introduction

In Chapter Five, the different dimensions of poverty were identified within the fishing communities, namely consumption poverty, non-achievement of education and health, exposure to risk and sense of insecurity. The different categories of people affected were also identified and the ways in which the poverty manifested itself was described. The research progressed to address the subsequent question of what the factors accounting for the poverty situation within these groups and regions were, from which a related research objective was formulated. This is the first in a series of four chapters aimed at contributing to the objective of identifying and analysing the causes of poverty within the groups and regions affected. The chapter analyses two related factors postulated by the research model as causes of poverty in the fisheries, namely the institutional framework and social factors. The institutional framework was interpreted to mean all dimensions of the public sector, their roles and activities. In that respect, it should be noted that the institutional framework is a “cross-cutting” factor, playing a role within each of the other factors that affected poverty. To illustrate the point, the model, shown in Figure 4.4 identified the financial aspect as a poverty factor but within financial factor there would be a role for the public sector. Consequently, those roles and activities that relate specifically to the other model factors would be discussed in the relevant chapters. These factors include the fisheries resource base, market mechanism, financial and economic factors. This chapter, therefore, covers selected aspects of the institutional framework relevant to the poverty issues in the fisheries, namely the institutions for fisheries development, provision of social services and infrastructure development. It also examines the status of local institutions

to assess their capacity to contribute towards addressing the problem of poverty among their communities.

The level of poverty within a community is affected by the social services, infrastructure and production services available to the community. In order to address poverty, therefore, relevant institutions need to be in place with clear roles, capacity and resources to provide these facilities and services. Following the introduction of the privatisation policy in Uganda, the role of Government has become confined to enforcing market rules, collecting taxes and providing an enabling environment for business. The roles have been separated between the Central and Local Governments. For each service, therefore, it is important to look at it at both levels.

6.2 Fisheries Institutions

Following adoption of policies under the Structural Adjustment Programmes, the role of the Central Government has been limited to providing a stable macro-economic policy environment for a free interplay of market forces as well as basic social services namely education, health care and safe drinking water to the population. It is also responsible for provision of vital economic infrastructure such as roads, research and extension services and good governance. Different Central Government institutions hold different responsibilities for these roles. The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is among the most important institutions, with respect to poverty in the fisheries. The mandate of MAAIF is to support, promote and guide the production of crops, livestock and fisheries so as to ensure improved quality and quantity of agricultural produce and products for domestic consumption, food security and export (MAAIF 2000). In accordance with the provisions of the 1995 Constitution of the Republic of Uganda, the Local Governments Act of 1997 and the 1998 Post Constitutional Restructuring Report, the key functions of MAAIF have been defined to include formulation and review of national policies, standards and plans for the agricultural sector control and management of crop and animal epidemics and disasters and control of agricultural chemicals. The Ministry is also responsible for regulation of fisheries activities and livestock

marketing; fisheries development; provision of technical advice and support supervision in the areas of agricultural advisory services and entomology; training and capacity building; designing, developing and maintaining a national information base on the agricultural sector; monitoring private providers of veterinary and other agricultural services to ensure compliance to standards; co-ordination, facilitation and supervision of national projects and programmes on agricultural development and; mobilisation of finances and technical assistance for the development of agriculture. In addition, the Ministry has specific functions in relation to the Local Governments that are spelt out in Sections 97 and 98 of the Local Governments Act, 1997. They include inspection, monitoring and evaluation of agricultural activities of Local Government; co-ordinating Government agricultural policies, initiatives and projects as they apply to Local Government and providing technical assistance, supervision and training to Local Government agricultural advisory service personnel.

The Ministry's structure at the political level comprises the Minister and three Ministers of State, each responsible for the sub-sectors of Crops, Animal Industry and Fisheries. At the technical level, there is the Permanent Secretary who is also the Accounting Officer and two directors each responsible for the directorates of Crops and Animal Resources and report directly to the Permanent Secretary. Under each directorate, there are departments, which are headed by Commissioners. In addition, there are also units for agricultural planning; finance and administration; policy analysis and an information resource centre.

Within MAAIF, however, the responsibility for fisheries lies with the Department for Fisheries Resources (DFR), a Department under the Directorate for Animal Resources. With the promulgation of the Local Governments Act, 1997, certain functions and services were decentralised and the current role of DFR is national fisheries planning, development and monitoring of the resources. Furthermore, the Department is responsible for promoting, supporting and guiding all the programmes within the Local Government and private sector fisheries (MAAIF 2000 p. 8).

The overall fisheries sector goal is to ensure increased and sustainable fish production and utilisation by properly managing the capture fisheries, promoting aquaculture and reducing post-harvest losses. This would contribute to the

overall national development policy of poverty alleviation and food security through the modernisation of the fisheries sector. In 1992, MAAIF separated the duties of extension from law-enforcement, thus leading to the creation of the Fisheries Regulations and Control Unit (FRCU). DFR underwent restructuring, assuming a staff of 39, of whom 6 were assigned to the FRCU (Ikwaput-Nyeko 1999 p.25). Its mandate is to manage effectively the optimal exploitation of fisheries resources; ensure the safety and quality of fish and fishery products for food security and economic development through appropriate regulations and technology. The remaining staff were deployed within the other units of DFR, namely production and planning, quality assurance, lake fisheries, aquaculture and statistics.

The research examined how DFR accomplished its functions relevant to poverty as the key fisheries institution. DFR was the organ of Central Government responsible for planning and development within the fisheries sector and it promoted, supported and guided all the programmes within the Local Government and private sector fisheries. Following the formulation of PEAP, the different sectors began to review, analyse or develop their policies to ensure that they were poverty-focused, in line with PEAP. It was the hope that this would minimise any possible occurrences of policy contradictions between sectors that were functionally related. As mentioned earlier, in agriculture, PMA was prepared as the framework within which PEAP ideals of a modernised agriculture sector would be realised. Preparation of the Fisheries Master Plan in 1999 and the drafting of the National Fisheries Policy in 2000 have been significant steps towards rationalising development within the fisheries. Sectoral policy is considered important in relating to the national policies and objectives. However, prior to these measures, there had been no clear sectoral policy guidelines and plan governing development of the fisheries (MAAIF 2000 p. iii). This situation was believed to be common and not necessarily unique to Uganda. Payne (2000) noted that within both artisanal coastal and inland fisheries, the interface between the resource and the people's livelihood tended to be largely disregarded in policies of governments and donors, which were dominated by other aspects of the sectoral policy. He highlighted areas of possible sectoral policy conflicts, citing the degenerative activities within the catchment that

would have impact on aquatic habitats, especially fisheries and expressed the need for policies on inland fisheries to be closely co-ordinated with those relating to those other activities. He went further to examine the policy positions of the major donors and concluded: "Most countries do not make clear their positions on fish as such but lump it in with general development policy" (Payne 2000 p.3).

Lack of articulate policies and comprehensive sector plans for the fisheries over a long period was reported to have had some negative effects. Poor funding for the sector, both at the central and local government levels was partly attributed to this. Despite clear budget proposals regularly prepared and submitted by DFR, the actual operating budgets have generally remained minimal and undefined, varying from month to month under unclear arrangements. DFR was reported to receive about 2-3% of the budget of MAAIF (Kiiza 1998). Even when the funds were released, the process of effecting payments for the various activities was strenuous, due to the bureaucratic procedures at MAAIF. The rather little donor funding received for fisheries activities during much of the 1990s was also attributed to lack of convincing sectoral policies and plans that could be an asset in competing for the funds. Lack of sector policies and sector plans also meant that there was no firm commitment by Government to any course of action, either in extension or any other development area beneficial to the poor.

Another function of DFR, the management of the fisheries resources, was also inadequately fulfilled. A detailed discussion of the fisheries resource management is provided in Chapter Eight. However, one of the limitations was inadequate legislation and regulations for managing the fisheries. Many of the laws relating to fisheries resources were outdated and did not reflect recent developments in the status of the fisheries as well as in principles of natural resources and environmental management. In some of the laws, the scope was limited and they did not apply to large water bodies particularly to Lake Victoria. The fees and fines in most fish related Acts and Statutes were too small in light of the continuous inflation and devaluation caused by currency reforms and were not effective as a sanction to deter offenders. The existing law did not provide adequate incentives, which would encourage the proper utilisation and conservation of the fisheries resources. The rules on fish sizes only covered *L.*

niloticus and the tilapines whereas there were other commercially exploitable species of fish that needed to be protected under such harvesting restrictions. Legal measures governing small-scale processors and traders were vague and licensing requirements did not appear to include them. Generally, the fishing rules were said to be ambiguous (Geheb and Crean 2001). Despite these weaknesses, however one positive aspect of the legislation was that there was now effective licensing on the main post-harvest sector, namely the industrial processing, if compliance with the terms of the licensing could be enforced, particularly the quota allocations (EPRC 1999).

Weak linkages were reported between DFR with research and hindered the flow of information. Although DFR was frequently involved in planning research programmes, the flow of the research findings to the Department was less than adequate so it did not have sufficient scientific information on which to base fisheries management decisions. Similarly, the linkages with the communities were weak, so it was not easy for the Department to establish the poverty needs of the communities and incorporate them adequately in its programs. The co-ordination of activities with the Local Governments was also poor, as there was no well-defined mechanism for the Department to link up with the districts with respect to policies, statistics and fisheries management. Similarly, the Department lacked proper mechanisms for linking up with other institutions, public, non-governmental and private, whose activities had bearing on the poverty of the fishers for the purpose of co-ordinating and complementing each others' efforts. It lacked facilities, particularly such field equipment as vehicles and boats needed to effectively carry out its functions. This was worsened by the difficult geographical configuration of the areas of operation, making many of the fish landing sites inaccessible. The personnel at DFR lacked skills in certain areas, namely socio-economic and gender analysis, necessary in assessing and monitoring of poverty. A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis has been done for DFR as presented in Table 6.1 below. According to Strategic Marketing and Planning Group Ltd. (1998), a SWOT analysis allows an institution to examine the gap between where it is today and where it needs to be in the future. It gives form to the problems challenging an organisation before critical decisions are made to resolve those problems.

Table 6.1 SWOT Analysis Table for the DFR:

<p>STRENGTHS</p> <p>The functions of the DFR are well defined. There is a sound organisational structure and roles of the different units are spelt out.</p> <p>The Fisheries Master Plan has been produced and the National Fisheries Policy is being finalised.</p> <p>The activities of the industrial processing plants are regulated.</p> <p>Fish quality inspection is carried out.</p>	<p>WEAKNESSES</p> <p>It operated without proper sectoral policies and plans for a long period.</p> <p>Co-ordination with research, Local Governments and the community is weak.</p> <p>The legal framework for fisheries management is weak and outdated.</p> <p>Implementation of fisheries management is unsatisfactory.</p> <p>Inadequate poverty reduction programs.</p> <p>Staff, equipment and funds for fisheries management are limited.</p> <p>There is no mechanism for involving the local communities in fisheries management</p> <p>The staffs are often involved in bad governance practices.</p>
<p>OPPORTUNITIES</p> <p>There is improved policy environment provided under PEAP and PMA available to it.</p> <p>Scientific knowledge and information has become increasingly available for resource management and sector development.</p> <p>National budgeting is being strengthened, to improve availability and flow of funds to departments.</p> <p>Donor funding to the sector has been increasing.</p> <p>Training opportunities exist within projects for DFR to take advantage of.</p> <p>High earnings are realised from fish export for development of the sector.</p> <p>Local communities are willing to participate in fisheries management.</p>	<p>THREATS</p> <p>Fishing communities are involved in unsustainable fishing practices.</p> <p>There are too many fishers on the lake and the population growth rate is high.</p> <p>There are limited alternative sources of livelihood outside the fisheries due to pressure on the land.</p> <p>Often, implementation of fisheries management regulations is constrained by political interference.</p>

In order to address some of these limitations, the Fisheries Master Plan and the National Fisheries Policy have proposed the formation of a Fisheries Authority. "A dynamic institution responsive to socio-economic changes and having latitude of administrative and financial autonomy is desired. It must have well-motivated staff, readily available road and water transport and other logistical requirements. Such an institution for fisheries management has various revenue sources. It has the means of setting up a system for sustainable funding of the sub-sector services from the industry at all levels of Government" (MAAIF 2000 P. 7). No further details are available on the institution as the idea is only being evolved. However, the key elements include autonomy and sustainable funding in order to fulfil the co-ordinating role for an increasingly complex sector.

There are other institutions that are implicitly connected to fisheries governance. The Uganda Investment Authority (UIA) is responsible for co-ordinating investment programmes in Uganda. Its responsibilities include receiving of all the licence applications by investors. It is, therefore, able to affect the capacity for fish processing licensed on the lake, with consequences for fish prices as well as for the resource base. Although in principle UIA is expected to co-operate with DFR closely in exercises of licensing industries to process fish, in practice this has not been effectively done and it is believed that more capacity has been licensed, given the inadequate information on resource stocks.

The Uganda National Bureau of Standards (UNBS) is responsible for developing standards, including those related to fish quality. Failure of the institution to monitor and enforce quality standards in the fisheries has led to poor quality fish going into both the domestic and export markets. The frequent ban on Uganda fish on the international market is a result of ineffective quality monitoring and control and has cost the poor people loss of income, namely the labourers working on boats fishing *L. niloticus* for export.

The fisheries of Lake Victoria are shared between Uganda, Kenya and Tanzania. In order to harmonise fisheries management between the countries, there is need for an appropriate institution. For a long time, this function was carried out by FAO CIFA Sub-Committee on Lake Victoria. Since 1994, however, a regional body, the Lake Victoria Fisheries Organisation (LVFO) has been created to assume the responsibility. LVFO was set up primarily to promote better

management of fisheries resources on the lake and to co-ordinate fisheries management with conservation. Uganda was a party to the convention, which was adopted on 30 June 1994.

The institution responsible for research is the National Agricultural Research Organisation (NARO). Fisheries Resources Research Institute (FIRRI) is the relevant research arm of NARO. It is the national institution mandated to undertake, promote and streamline fisheries research in Uganda and to ensure dissemination and application of research results.

The mission of FIRRI is to contribute to poverty eradication, food security and the conservation of the natural resource base by providing improved technologies, methods and technical advice for increased and sustainable fish production and utilisation, a healthy and productive water environment and people-centred policies for sustainable fish production.

The research mandate areas of FIRRI under capture fisheries include fisheries technology research, aimed at generating technologies, methods and advice for sustainable exploitation of fisheries. The studies on the fish production processes and aquatic environmental health are aimed at integration of lake productivity processes into fisheries management and prevention of pollution and degradation of the fish habitat. A program of socio-economic studies cuts across all the research areas and its objective is to generate data that would be used to formulate policies governing management and utilisation of Lake Victoria resources with greater community participation in formulation and implementation, so as to enable them maximise benefits from the fishery.

Other research areas falling under the mandate of FIRRI include aquaculture and post-harvest processes. The objective of the aquaculture research is to develop technologies, methods and advice for increased production of a variety of quality fish fry and of appropriate fish feeds. It is also aimed at providing information for improved pond management, prevention and control of fish diseases, parasites and predators. The post harvest research is geared towards minimising the post-harvest losses in the fisheries. Enhancing of capacity for packaging and disseminating information from the research processes is one of the other activities at FIRRI. The research activities of the Institute were introduced in

Chapter One. The Institute has moved from implementation of national to more regional projects on the lake, involving the participation of the three riparian states on Lake Victoria, namely Uganda, Kenya and Tanzania. The projects have mostly been funded through bilateral as well as international donor agencies.

A detailed discussion of research services is done in Chapter Seven but only a few observations are made here. Generally, the research has had little effect on the poor because of a number of limitations. Prior to the recently availed donor funding, there had been inadequate resources from Government for research activities. Although Government had always indicated that research was one of its first priorities, the funds released were too little and irregular, making it difficult to schedule and successfully accomplish research activities. Another problem is concerned with the manpower situation at FIRRI, which is heavily biased towards the biological sciences. Geheb and Crean (2001) observed: "The fisheries research institutes of East Africa are dominated by the physical sciences. In Kenya, there are four so-called 'socio-economists' on the staff of the Kenya Marine and Fisheries Research Institute's station in Kisumu; in Tanzania there are two, and in Uganda one. Nevertheless, research priorities amongst the institutes continue to call for a biological research bias: .." (Geheb and Crean 2001 p. 9). FIRRI's staffing, therefore, has inadequate social science personnel to handle poverty-related research and analysis. Until recently, FIRRI also had the problem of training for its manpower in the different disciplines. However, the situation greatly improved as a result of the training components provided on most of the donor funded projects implemented by the Institute in the 1990s.

FIRRI maintains a wide network of collaboration with many national, regional and international fisheries related institutions and development partners. The collaboration is both financial and technical. Under financial collaboration funds are made available through which FIRRI is able to carry out research work. In addition to the Government, the institute receives funding from the World Bank, EU, GEF, IDRC and DFID. Under technical co-operation, external experts from the collaborating institutions provide support to FIRRI researchers either through training, backstopping or collaborative research projects. In some cases, both financial and technical collaboration are arranged together, where the donor also

sends technical experts. Concerns have been raised about some of the research programs of FIRRI under the different arrangements and how they were linked to the poor. Some research has been said to be donor driven, serving the needs as seen by the donors and not fitting well within the agreed priority areas of the Institute. Others are said to be top-down, originated and driven by FIRRI with limited participation of the poor. For both types of projects, the needs and wishes of the poor are not sufficiently incorporated and their participation and, consequently, 'ownership' of the studies is minimal. Such studies, which form the bulk of FIRRI research, have little chance of contributing towards alleviation of poverty.

Even where FIRRI has been able to generate useful research findings, it has been difficult to translate them into policies or activities. Policy documents relating to fisheries are not prepared by FIRRI but originate from DFR. Given the weak links between the two institutions as mentioned above, DFR has often not internalised FIRRI's findings and recommendations adequately in order to cause policy changes based on them. With respect to new technologies for the direct use by the grassroots, there is a gap created by the weak links with extension services undertaken by the districts. Furthermore, there is no mechanism for linking up with the fishery equipment producers to incorporate research findings and recommendations into new tools for the industry. As a consequence of lack of these links and mechanisms, FIRRI's findings, therefore, remain largely on the shelves.

The results of a SWOT analysis for FIRRI are presented in Table 6.2.

Table 6.2: SWOT Analysis Table for FIRRI:

<p>STRENGTHS</p> <p>The Institute has a good organisational structure, with different categories of staff needed for research.</p> <p>Training position improved, with qualified personnel in most fields.</p> <p>Improved research planning methodologies to make them client oriented.</p> <p>Increased scientific data and publications have been produced.</p> <p>Information and policy advice have been availed to policy makers.</p>	<p>WEAKNESSES</p> <p>There is imbalance within the disciplinary emphasis in favour of biological studies.</p> <p>Program formulation at the institute is often top-down, reflecting more the interests of the institute than of end users.</p> <p>There is inadequate involvement of clients in the different research processes.</p> <p>Research findings are not adequately disseminated to end-users.</p> <p>Little publicity about research activities is done among the clients.</p> <p>There are inadequate staffing, funding and research facilities.</p> <p>Links with DFR and Local Governments are not sufficiently strong.</p>
<p>OPPORTUNITIES</p> <p>There is a favourable Government policy towards research, provided for under PEAP and PMA.</p> <p>Broad research disciplines are available to strengthen the research contribution of the Institute.</p> <p>Government budgetary allocations to FIRRI have continued.</p> <p>Donor funding continues to be available from different sources for research activities.</p> <p>FIRRI's wide network of collaboration strengthens its research activities.</p> <p>Local communities have shown willingness to participate in research programmes.</p>	<p>THREATS</p>

Local Governments are other institutions of relevance to the poverty in the fisheries. A system of Local Government was created in Uganda under the provisions of Article 176 of the Constitution, with the district as the basic administrative unit (Government of Uganda 1995). The devolution of powers from the Centre to the districts and lower councils was provided for in the Local Governments Act, 1997 as follows: "An Act to amend, consolidate and streamline the existing law on Local Governments in line with the Constitution to give effect to the decentralisation and devolution of functions, powers and services; and to provide for decentralisation at all levels of Local Governments to ensure good governance and democratic participation in, and control of decision making by the people; and to provide for revenue and the political and administrative set-up of Local Governments; and to provide for election of Local Councils and any other matters connected to the above" (Government of Uganda 1997 p. 9). Responsibility for development and for core-services was, therefore, vested in the Local Governments. In accordance with Article 31 and Second Schedule, Part 2, 5 (i) of the Local Governments Act, 1997, the function "crop, animal and fisheries husbandry extension services" is decentralised to the districts (Government of Uganda 1997 p. 30, 116). Under Second Schedule Part 4, 6, "control of local hunting" is devolved to the Sub-county (Government of Uganda 1997 p. 125). These provisions assigned the districts the responsibility for extension and a share of fisheries management as well. At the time of the research, there were ten districts on Lake Victoria. They included, from the east, Busia, Bugiri, Iganga, Jinja, Mukono, Kampala, Mpigi, Masaka, Rakai and Kalangala. Over the last twelve months, however, new districts have been created, including Mayuge, which was carved out of Iganga and has now cut Iganga District off the lake; Kayunga, carved out of Mukono and Wakiso sliced off Mpigi District. With the three additions and the cutting off of Iganga, there are now twelve districts. However, as stated earlier, data collection was carried out on the original ten districts listed above. Each district is sub-divided into varying numbers of sub-counties, but some of the sub-counties are not so important for fisheries because they are not on the lake. In accordance with Article 4, 2 (a) of the Local Governments Act, 1997, The Sub-county is the next Local Government in a District rural area (Government of Uganda 1997 p. 12). The extension services are discussed in detail in Chapter Seven. However, it is

worth noting here that the Local Governments operate within similar constraints as DFR. These include lack of clear extension messages to disseminate under the extension as there is little input from research into the extension content. The staff lack facilities and resources to carry out extension activities. There has been shortage of staff and inadequate training for the role. Recently, however, Government has carried out recruitment of university graduates at all sub-counties to strengthen extension services among the grassroots. However, the recruited officers lack training and experience in extension methodologies, facilities and operational funds to provide effective extension services. The service is also said to be affected by corruption among some officers.

The new agriculture sector strategy for extension is provided for within PMA and is discussed in Chapter Seven. Generally, it includes the main technological requirements for the fishers, namely knowledge, research, resources, infrastructure and services. However, the provisions lack detail with respect to fisheries. It will be required to develop the ideas proposed within PMA into a detailed program for fisheries. This can then be translated into approaches and techniques that the newly recruited officers can work with.

The results of a SWOT analysis of the Local Governments with respect to fisheries functions are provided in Table 6.3 below.

Table 6.3: SWOT Analysis Table for Local Governments:

<p>STRENGTHS</p> <p>District funds and facilities have begun to be allocated for fisheries activities.</p> <p>Some landing site facilities have been improved upon.</p> <p>Fishing communities have been organised under the LMCs.</p> <p>Sanitation facilities have been initiated at some landing sites.</p>	<p>WEAKNESSES</p> <p>Insufficient extension services are provided to the fishers.</p> <p>Statistics on fisheries activities are poorly kept.</p> <p>Implementation of fisheries management is inadequate.</p> <p>Little training is provided to fishers through short courses.</p> <p>There is insufficient knowledge among staffs.</p> <p>Staff, equipment and funds for fisheries activities are limited.</p> <p>Links with DFR, FIRRI and the local communities are poor</p> <p>The staffs are often involved in bad governance practices.</p>
<p>OPPORTUNITIES</p> <p>Legal provisions within the Constitution, 1995 and the Local Governments Act, 1997 and policies within PEAP and PMA are available to guide their involvement in fisheries activities.</p> <p>Budgetary provisions to Local Governments have been improving over the years.</p> <p>Donor funds are beginning to reach the districts.</p> <p>Training opportunities are available within projects for staffs.</p>	<p>THREATS</p> <p>Job insecurity is a continuous threat among staffs.</p> <p>Fishers are involved in widespread unsustainable fishing practices.</p> <p>There are limited income generating alternatives for the communities outside the fisheries.</p> <p>High rate of population growth leads to influx of people into the fisheries.</p> <p>Fisheries management is often hindered by political interference.</p> <p>There is insufficient recognition of fishers within the district populations.</p>

6.3 Social Service Institutions

The bodies involved in providing health services are among the relevant institutions for poverty alleviation. Uganda's health policies and strategies were introduced in Chapter Two and responsibility for health is vested in the Ministry of Health (MH). The operations of MH are guided by the National Health Policy. The National Health Policy and Strategic Plan Frame have been formulated within the context of the provisions of the Constitution of the Republic of Uganda 1995 and the Local Governments Act, 1997 which decentralised governance and service delivery. In addition, the new Health Policy derives guidance directly from the National Health Sector Reform Programme and the National Poverty Eradication Programme. Furthermore, the Alma Ata Declaration of Health for All (HFA) strategy, provides significant input and guidance into the current policy (MH 1998). The overall goal of the health sector is the attainment of a good standard of health by all people in Uganda in order to promote a healthy and productive life. The overall objective of health sector policy is to reduce mortality, morbidity and fertility, and the disparities therein.

The implementation of this policy is based on a number of strategies as highlighted below (MH 1998). Primary Health Care (PHC) would remain the basic philosophy and strategy for national health development. To this end, a Minimum Health Care Package will form the primary focus of the health care delivery system. Equitable distribution of health services shall be assured throughout the country, and priority shall be given to further decentralisation of the health care delivery system to ensure effective access by all sections of the population to the National Minimum Health Care Package. Good quality health care shall be assured through cost-effective interventions, targeted at the most important health problems of the population, with an optimal mix of appropriate health technology and trained human resources, which are affordable and sustainable. A high level of efficiency and accountability shall be maintained in the development and management of the national health system. Greater attention and support shall be given to health promotion, disease prevention and empowerment of individuals and communities for a more active role in health development. Emerging health problems, including health care for the elderly,

shall be given appropriate attention at all levels. The existing collaboration and partnership shall be further strengthened between the public and private sectors in health, including NGOs, private and traditional practitioners, while safeguarding the identity of each. Health being an integral component of overall development, inter-sectoral co-operation and co-ordination between the different health-related Ministries, development agencies, and other relevant institutions, shall be strengthened for stronger solidarity in health development. A gender sensitive and responsive national health system shall be achieved through mainstreaming gender considerations in planning and implementation of all health programmes. Gender sensitivity will require that gender related barriers to health care be removed. Equal weight shall be given to knowledge, values and experience of women and men, and that they participate equally in research, policy and decision making. Sexuality and sexually related behaviour and gender relations including child sexual abuse, violence against women, genital mutilation and other harmful practices shall be routinely taken into consideration and addressed in collaboration with the relevant stakeholders. Efforts will be intensified to promote sustainable additional health financing mechanisms.

The mission statement of MH is to provide the policies, guidance and standards; facilitate district health services and manage nationally based health services, to ensure the attainment of a good standard of health by all people in Uganda in order to promote a healthy and productive life (MH website). Its strategic objectives are to establish policies, guidelines and standards for the delivery of a minimum health care package in the Districts and at National level; to co-ordinate and facilitate all stakeholders in the health sector to achieve the national goals for health; to provide sufficient referral and tertiary health care services so that patients who cannot be successfully treated at District level can receive appropriate medical attention; to ensure that sufficient health professional training is undertaken to meet national requirements and regulate the employment of all health professionals to ensure minimum standards of professional practice. The Ministry also has responsibility for co-ordinating research activities in order to support health policy and programme improvements; developing health infrastructure and quality assurance system that facilitates both District and national planning and policy implementation,

monitoring and evaluation and providing efficient and effective systems for the control of epidemics.

Under decentralisation policy, provision of health services is one of the functions devolved to Local Government. This is provided for in the Local Governments Act, 1997 under Second Schedule, Part 2, 2. The devolved medical and health services include hospitals other than those providing referral and medical training; health centres, dispensaries, sub-dispensaries and first-aid posts. They would also take responsibility for maternity and child welfare services and control of communicable diseases, including HIV/AIDS, leprosy and tuberculosis. Other services include control of the spread of disease in the district; rural ambulance services; primary health care services; vector control; environmental sanitation and health education (Government of Uganda 1997).

Delivery of health services by Government has been hindered by different factors. The facilities are said to be insufficient, with patients having to walk long distances before they could get to a health unit. Furthermore, the health units were said to be poorly equipped and supplied with drugs, as a result of poor funding by both the Central and the Local Governments. The staffing is also poor, with the ratio of doctor to population estimated at 1:27,140 (UNDP 1998). Other categories of medical specialists are also similarly in short supply. Medical personnel receive low remuneration like most the other civil servants in the country. However, they do not find this acceptable and as a result, there have been frequent strikes organised under the Uganda Medical Association to press for better remuneration. During the strikes, patients remained largely unattended to and some are believed to have died as a result. Rampant corruption is also reported among medical personnel, involving bribes as well as transfer of drugs from public units to private clinics. The National Household Survey, 1999/2000 examined the utilisation of health services by the people and reported that among the people who fell sick, many practised self treatment while others preferred to go to private clinics. This was an indication of the dissatisfaction of the people with health services provided by Government institutions.

A SWOT analysis has been carried out with respect to MH and the results are given in Table 6.4 below:

Table 6.4: SWOT Analysis Table for MH:

<p>STRENGTHS</p> <p>National Health Policy has been put in place to reduce mortality, morbidity and fertility.</p> <p>Strategies for implementation of the policy developed, based on Primary Health Care.</p> <p>A number of health units constructed and rehabilitated.</p> <p>About 80% of children vaccinated against polio (UBOS 2001c p.40).</p>	<p>WEAKNESSES</p> <p>Health units are poorly equipped and supplied with drugs.</p> <p>Funding by both the Central and the Local Governments is poor.</p> <p>Staffing is poor, with limited skilled manpower.</p> <p>Inadequate health sector planning capacity at Local Government levels.</p> <p>Inadequate sensitisation to communities on health issues.</p> <p>Poor family planning services.</p> <p>Patients have to walk long distances to health units.</p> <p>Only 36% of women deliver in health clinics (UBOS 2001c p.38).</p> <p>High incidence of unwanted pregnancies</p> <p>Patients resorting to self-medication and use of traditional healers.</p> <p>Corruption among personnel.</p> <p>Theft of drugs.</p>
<p>OPPORTUNITIES</p> <p>Improved policy environment provided under PEAP for the health sector.</p> <p>A large number of NGO and private practitioners available to supplement Government's efforts.</p> <p>Scientific knowledge and information increasingly available for health sector.</p> <p>National budgeting strengthened to improve availability and flow of funds.</p> <p>Donor funding to the sector increasing.</p> <p>Training provisions within PEAP for health workers.</p> <p>Education in population increasing.</p>	<p>THREATS</p> <p>Low pay for health workers.</p> <p>Malaria becoming resistant to common drugs.</p> <p>Ignorance about sexually transmitted diseases, particularly AIDS.</p> <p>Largely uneducated population.</p>

Education institutions are also important for poverty issues. Ministry of Education and Sports (MES) is the Central Government institution responsible for education services, a responsibility that is provided for by the Constitution. The functions and services of MES include formulating education policy; preparing national plans for the provision of services and co-ordinating the plans made by Local Governments; developing mechanisms for co-ordinating with other stakeholders on the development and management of education; efficient and effective organization and management of education institutions; undertaking national censuses and statistics and ensuring that national education standards are complied with.

Like other services, education was also devolved to the Local Governments. The Local Governments Act, 1997 specifies the education services that are the responsibility of the districts to include nursery, primary, secondary, trade, special education and technical education. The districts are also responsible for aiding and supporting the establishment and maintenance of schools (Government of Uganda 1997).

Universal Primary Education (UPE), described in Chapter Two, forms the core of the Government's Education Sector Investment Plan (ESIP) 1997-2003. ESIP was formulated to implement the 1992 Government White Paper on the Education Policy Review Commission Report. The immediate effect of introduction of UPE was to more than double the primary school enrolment from 2.6 million in 1995 to 5.3 million in 1997. The success of UPE has been limited by a number of factors. There has been the problem of inadequate classrooms to accommodate the large number of pupils who decided to take advantage of the policy and join primary schools. Similarly, the number of teachers has been insufficient. Furthermore, many of the teachers recruited under UPE are untrained and there is need to put in place a program to train them. They have also not been regularly paid, as many of them were not yet on the payroll of MES. There is shortage of scholastic materials to cope with the upsurge in enrolment. To give an indication of the magnitude of the problems, classroom/pupil ratio rose from about 1:45 in 1995 to 1:118 in 2000. During the same period, teacher/pupil ratio fluctuated between 1:35 and 1:62 (UBOS 2000). Pupil/textbook ratio rose to 6:1. The limitations within the UPE policy are

expected to result in decline in quality within the education system, with implications for poverty. In view of the problems above, a number of donors have offered support to the program, including DFID and the World Bank.

The education institutions have, therefore, contributed to poverty in fisheries through a number of ways. First, until recently the education system has not been able to provide education to significant proportions of the fishers, depicted by the high proportion of persons with no schooling and the illiterates as explained in Chapter Five. The system has been characterised by high drop-out rates, with the result that the amount of educational achievement derived from the system has been limited. During the research, it was noted that schools serving the fishing communities were far from the landing sites. Many of them were also below the average, in terms of equipment and staffing. Teachers often involved themselves in fishing activities to supplement their income, at the detriment of the children's education. For several years now, products from Uganda's educational system have been unable to find jobs due to weaknesses within the economic structure. However, because the school curricula have been outdated and irrelevant towards the needs of the people, the system did not assist by providing people with any real-life skills for livelihood. In particular, the education system did not provide fisheries education to the fishing communities, who had to depend on indigenous knowledge for their activities in the fisheries.

A SWOT analysis was carried out for MES and the results are presented in Table 6.5 below. The high number of weaknesses and opportunities revealed indicate that MES not only needs to do more to contribute towards poverty reduction but has opportunity to do so. Relating to the objectives of the research, it is concluded that MES contributed to impoverishment of fishing communities but could also contribute to their improvement by utilising the opportunities to enhance their educational achievements.

Table 6.5: SWOT Analysis Table for MES:

<p>STRENGTHS</p> <p>Education policy and national plans for the provision of services formulated.</p> <p>Plans made by Local Governments co-ordinated.</p> <p>Universal Primary Education (UPE) being implemented.</p> <p>A number of schools constructed and rehabilitated.</p> <p>Total primary enrolment increased from 3.6 million to 6.6 million between 1994/95 and 1999/00 (UBOS 2001c p.18).</p> <p>Literacy rate has risen from 61% to 65% between 1995/96 and 1999/00 (UBOS 2001c p.16).</p>	<p>WEAKNESSES</p> <p>Funding by both the Central and the Local Governments is poor.</p> <p>Limited planning and development capacity in districts for UPE.</p> <p>Inadequate classrooms to accommodate the large number of pupils under UPE.</p> <p>Insufficient number of teachers.</p> <p>Un-trained teachers.</p> <p>Irregular payments to teachers.</p> <p>Shortage of scholastic materials to cope with the upsurge in enrolment.</p> <p>Irrelevant curricula that do not serve the needs of the country.</p> <p>High school drop-outs.</p> <p>Inadequate secondary schools to absorb outputs of UPE.</p> <p>Schools too far from landing sites.</p> <p>Dangers of shuttling children over hazardous waters every day to school.</p> <p>Limited fisheries education offered by schools.</p> <p>Corruption among head teachers and education officers.</p> <p>'Ghost' teachers on the payroll.</p>
<p>OPPORTUNITIES</p> <p>Improved policy environment provided under UPE for the education sector.</p> <p>A large number of NGO and private schools available to supplement Government's efforts.</p> <p>National budgeting is being strengthened, to improve availability and flow of funds.</p> <p>Donor funding for education offered.</p>	<p>THREATS</p> <p>Low pay for teachers.</p> <p>Parents who do not show concern for education of children.</p>

6.4 Institutions for Infrastructure Development

Another important institution is the Ministry of Works, Housing and Communication (MWHC), responsible for provision of infrastructure. Provision of an efficient road network is essential for poverty alleviation strategy and enhancement of rural incomes. Rural feeder roads are particularly crucial for production for the market and modernisation in fisheries. The mission of MWHC is to promote an adequate, effective, safe and maintained transport infrastructure; an efficient and effective communications system; safe housing, buildings and infrastructure and to maintain government buildings. It is charged with the task of directly taking part in or overseeing work of the transport, communications and housing sub-sectors of the infrastructure sector.

The Ministry has formulated the Road Sector Development Programme to guide development of the sector over a ten-year period. The overall goals of the programme are economic growth and poverty reduction, sustained macro-economic stability and improved service delivery. This is to be achieved using the strategies of efficient road administration, effective road maintenance, and road rehabilitation, up-grading the relevant roads to bitumen and developing capacity among contractors and consultants. The programme is estimated to cost US\$ 1.5 billion, with Government contributing 28% of it. The participating donor agencies include IDA, EU, ADB, DANIDA, JICA, DFID, KfW. Consistent with Government's institutional reform programme objective to eliminate direct state involvement in all but essential public services and to improve institutional efficiency, the RSDP pursues important institutional reform objectives, including the privatisation of road management. Government has consequently decided to form a Road Agency to handle the entire national road network, expected to be set up in 2002. During the transition period, however, MWHC would be re-organised accordingly and the Road Agency Formation Unit (RAFU) has been created as a semi-autonomous project to prepare for the establishment of the Road Agency. Although the unit enjoys a fair degree of autonomy in its operations, RAFU is still effectively part of the MWHC. RAFU is currently charged with the primary responsibility of executing the Road Sector Development Programme, RSDP. Once the Road Agency is in place, the road management activities of the MWHC will be transferred to the Agency thus

enabling the Ministry to give more impetus to its prime responsibility as a policy making and regulatory body.

As a result of decentralisation, some of the functions were devolved to the districts. The responsibilities of MWHC have remained the maintenance, rehabilitation and development of national roads; macro-planning, co-ordination, monitoring, setting standards and capacity building for district, urban and community roads. The Ministry has been responsible for the Sector Policy and Management Studies and Road Project Preparation Studies, including procurement of contractors and consultants for study and construction projects. It is also responsible for inspection, licensing and registration of Public Service Vehicles (PSV) and inland water vessels. Its main involvement with the housing and communications is with policy and sector reforms.

The functions of the Local Government as provided for in the Local Governments Act, 1997, include construction, rehabilitation and maintenance of roads not under the responsibility of the Central Government. The district road network comprises approximately 25,000 kilometres of roads. The urban roads total up to 2,800 kilometres within Kampala City Council, the thirteen Municipal Councils and the fifty Town Councils in the country. The maintenance of these roads is the mandate of District and Urban Councils respectively. Community roads, which are approximately 30,000 kilometres, are a responsibility of communities.

Some of the constraints to infrastructure development include delays and inadequate financial releases to MWHC, procurement delays, inadequate staffing and ageing construction and maintenance machinery. The constraint of delays in procurement is easing up due to the establishment of a now functional Procurement Unit within the Ministry.

Referring to the objective of the research, the institutions responsible for infrastructure development have contributed to the poverty in fisheries through inadequate provision of access roads to fish production areas. As shown in Chapter Seven Table 7.9, only 23% of the landing sites on Lake Victoria, Uganda had all weather access roads. As a result of this situation, fishery

operators have suffered low fish prices and post harvest losses on their commodities, contributing to their poverty.

The districts of Kalangala, Mpigi, Mukono, Jinja, Iganga and Bugiri have over 100 islands on Lake Victoria, from where fishing activities are carried out. The Government's feeder road rehabilitation programme is not relevant for these islands, as what they need is water transport. Inadequate water transport has resulted in high risks in fish transportation as well as post-harvest losses suffered by fishers as the little transport boats get held up due to poor weather, which was a constraint to the marketing of fish. However, MWHC has no clear plans for developing this form of transport. Furthermore, good handling of fish requires that appropriate landing facilities be available so that fish is not contaminated through contact with mud. The policy of MWHC, is however, silent on development of port facilities. Further information has been generated through the SWOT analysis for MWHC as presented in Table 6.6. In view of the broad role of MWHC covering different aspects of the economy, the analysis has been limited to the aspects relevant to fisheries.

The way forward for the infrastructure to contribute towards poverty in fisheries is, therefore, to address the problems of access roads, landing piers and water transport.

Table 6.6: SWOT Analysis Table for MWHC:

<p>STRENGTHS</p> <p>Infrastructure development policies formulated.</p> <p>Access roads provided to 23% of landing sites.</p>	<p>WEAKNESSES</p> <p>Delays and inadequate financial releases to MWHC.</p> <p>Procurement delays.</p> <p>Inadequate staffing.</p> <p>Ageing construction and maintenance machinery.</p> <p>Limited capacity within Local Government.</p> <p>Access roads to most landing sites not constructed.</p> <p>Landing piers not constructed.</p> <p>Water transport not developed.</p>
<p>OPPORTUNITIES</p> <p>Improved policy environment provided under PEAP and PMA for infrastructure development.</p> <p>National budgeting is being strengthened, to improve availability and flow of funds.</p> <p>Donor funding for infrastructure expected.</p>	<p>THREATS</p> <p>Limited local private sector capacity for road construction.</p>

Another important Government institution for poverty in the fisheries is the Ministry of Finance, Planning and Economic Development (MFPED). The Ministry is responsible for economic policies that shape the macro-economic environment within which fishers operate. Rate of inflation, taxation, interest and foreign exchange rates all have effect on the poor in fisheries and they are largely influenced by policies. MFPED is also responsible for funding for all Government programmes and its decisions affect the services received by the fishing communities. The Ministry is, therefore, believed to have contributed to poverty through the Structural Adjustment Policies, which have had negative effects on the poor. It has failed to mobilise and provide adequate resources for

fisheries management, extension and research, provision of infrastructure and of education and health services. Its taxation policies have given no considerations to the interests and needs of the poor. It is, often, said to be the single institution with the greatest effect on poverty in most sectors of the economy.

6.5 Local Institutions

Local institutions have been examined with respect to their effects on poverty. The expected role of local institutions is to promote development by assisting their members to take advantage of opportunities presented. Some of the key functions would include representing the interest of the communities, mobilising, involving and informing them on issues of development. Different types of local institutions were noted at the landing sites during the research and their relative importance was investigated. Key informants at 76 research landing sites and market centres were asked to indicate which of the institutions were responsible for providing leadership at their sites. At some of the landing sites, more than one institution was indicated, so Multiple Response Analysis was used to compute the results, which are summarised in Table 6.7.

Table 6.7 Leadership at Landing Sites:

Institution	Percent of Responses
Beach Leader	23.8
Local Council	34.3
Landing Management Committee	28.1
Fisheries Staff	5.6
Market Administration	6.3
Police/ Local Defence Unit	1.9
Total	100

Source: Survey Data

The data showed that the leadership was provided by the Local Councils (LC), the Landing Management Committees (LMC) and the Beach Leaders in that

order. However, Local Councils cannot be classified as a local institution as it is a Government organ for official administration in the villages. It carries out official functions of Government at the village level, notably mobilisation of the people for Government programmes and passing official communication to the local people. The position of the LMC is also ambiguous. It is really another top-down institution the creation of which was first directed by district and national authorities meeting to identify ways of controlling fish poisoning on the lakes. The first LMCs were, in fact, appointed for the landing sites by authorities at the Sub-county level in collaboration with the District Fisheries Officer. Many of the early members of LMC were indeed not fishing people, put there deliberately to check on the fishers who might still wish to continue with fish poisoning under some cover. It may be true that this has gradually changed and fishers have greater say in appointing and firing their LMC but during the research, it was reported by several communities that the LMC was there to "assist" the Fisheries Department staff on fisheries management issues, implying that it was perceived as an organ of the Fisheries Department and of the District Administration rather than a local institution. The Beach Leader, also known as the "gabunga" is the only institution that is wholly local, constituted by the people and changed by them. However, his roles inclined more towards social harmony within the fishing village and less on resource management or development. It has become increasingly accepted, therefore, that LMC is a more effective local institution for collaboration on development issues.

As a continuation of the investigation, the key informants were asked to mention who made the key decisions on issues related to the landing sites. The results, presented in Table 6.8, show that LMC was most responsible for this.

Table 6.8 Decision-Making at the Landing Sites:

Institution	Percent of Responses
Beach Leader	17.1
Local Council	31.8
Landing Management Committee	36.3
Fisheries Staff	8.5
Market Administration	4.7
Others	1.6
Total	100

Source: Survey Data

Table 6.8 showed that LMCs were regarded as the most important institution for making decisions that affected the landing sites. This was followed closely by the LCs. The power of the truly “indigenous” local institution, the Beach Leader, in making decision was seen as being less than those of the “introduced” local institutions. The implication of this is that unless the communities can reasonably ‘own’ these institutions, their decisions will not always be readily acceptable to them.

Lastly, the method of communication was investigated and the responses summarised in Table 6.9. The data showed that the most common methods of communication were through meetings and by “word of mouth”. Both methods, however, have their strengths and weaknesses, as explained later in this section.

Table 6.9 Communication Methods at the Landing Sites:

Communication Method	Percent of Responses
Word of mouth	34.9
Mobilisation	14.0
Mass media	3.5
Written messages	9.3
Meetings	37.1
TV	1.2
Total	100

Source: Survey Data

Analysis of the local institutions was based on selected criteria, namely whether the institutions were strong enough to play the roles expected of them; whether they adequately represented the poor and ensured that their interests were catered for and if they were able to adequately mobilise and inform the poor for poverty alleviation activities. First it should be noted that the strengths of the local institutions was in their local knowledge of the poverty issues and of the communities. They were also in day to day contact with them, given their proximity. However, the local institutions were often not strong enough to meet the challenges of modern development. Their members were drawn from the local communities, characterised by lack of education, exposure and experience with development issues. There were no effective capacity building programs from Government or NGOs to assist on this. The evidence of their weakness was exhibited in their lack of plans and programs of the activities. They were perceived negatively by Government officials, who have been reluctant to entrust them with too much responsibility, as Geheb and Crean (2001) put it: "In many respects, fishermen and their communities are seen as ignorant, slovenly and untruthful" (Geheb and Crean 2001 p. 9). Many of the committees were divided and, unable to function as teams, so the members abandoned their work to the chairpersons only. The committees were made up of mainly the rich and as

explained in Chapter Five, the poor had little chances of joining the leadership. The methods of communication did not favour the poor. Although meetings were said to be open to everybody, in reality the poor were too shy to attend because of their poor clothing and lack of shoes to appear in public. Those who came were often intimidated and could not speak, so the perspective of the poor was never well presented at the meetings. When the communication was by “word of mouth”, meaning that whoever heard the message was expected to pass it to another, the poor were often missed out on the perception that they would have no use for such information. Furthermore, “word of mouth” communication was often seriously distorted and unsatisfactory.

Different categories of the poor were hurt by the leadership in different ways. The following quotation is an example of how the poor suffered from the leadership: “On their part, women in Misonzi saw their local leaders as people who cannot protect them from sexual abuse because they are compromised by the rich and powerful. Some of the very men who harass women are on the LC committee thereby being leaders and law-makers. Women are not as rich as the men so they cannot challenge their power. In Misonzi, money is power so the have-nots are trampled upon. The rich are untouchables who can break the laws as and when they wish” (MFPED 2000 p. 76). This example illustrated the points about wrong-doers being in the leadership of the local institutions, lack of recognition of the interests and rights of the poor and corruption among the community leaders. The institutions also lacked facilities and resources for work. The limitations within the local institutions hinder their role in representing, mobilising and informing the communities with respect to resource management, extension, research and provision of social services. It is concluded that as a result of these weaknesses, the local institutions were a factor in the impoverishment of its members. A further assessment of the local institutions was done using the SWOT approach. The results presented in Table 6.10 reveal that although the institutions had some weaknesses, they also had considerable strengths and opportunities. Local institutions could, therefore, be a factor in poverty reduction interventions for the fisheries. These findings contribute to the research questions of what the causes of poverty are and what are the options for intervention.

Table 6.10 SWOT Analysis Table for LMC:

<p>STRENGTHS</p> <p>Use of fish poison has been controlled under the LMCs.</p> <p>Bye-laws have been instituted to streamline activities at the landing sites.</p> <p>New fishers to the landing sites have been registered and issued with fishing permits.</p> <p>Theft of fishing gear is kept under control.</p> <p>Mechanisms for settling disputes between fishers have been instituted.</p> <p>Conflicts with market operators over revenue payment are resolved.</p> <p>Fishers are informed and mobilised for developmental programs.</p> <p>Familiarity with the local situation pertaining to poverty.</p> <p>Close contact with the fishing communities.</p>	<p>WEAKNESSES</p> <p>Low leadership skills within LMCs.</p> <p>Lack of clear plans and programmes.</p> <p>Limited facilities and resources to operate with.</p> <p>Lack of recognition for the poor.</p> <p>Corruption and misuse of resources.</p> <p>Division among the leaders.</p> <p>Unfit people joining leadership of landing sites.</p>
<p>OPPORTUNITIES</p> <p>Roles have been given by the Local Governments Act, 1997.</p> <p>Government willing to form partnerships with local institutions for resource management, training, extension, research and other types of service delivery.</p>	<p>THREATS</p> <p>Low recognition by some Government officials.</p> <p>Political interference with fisheries management roles.</p> <p>Rapid resource decline.</p> <p>Water hyacinth infestation.</p>

6.6 Institutional Links

In paragraph 6.2, it was noted that DFR lacked effective links with research, Local Government and the local communities. The links are also important with the 'non-fisheries' institutions discussed in the chapter, which provide essential services for poverty alleviation in fisheries. It was noted that many of the roles described for MAAIF, MH, MES, MWHC and MFPED were all falling under PEAP. However, the mechanisms for linking up the various sectoral activities under PEAP were not defined and each institution was expected to play its role satisfactorily. MFPED has the responsibility of co-ordinating economic development in broad terms and often conducts meetings, planning and consultations with the different ministries. These consultations tend to be broad, covering issues at the macro-economic level while bilateral consultations between relevant ministries are left to them. The next option is through the Agricultural Policy Committee, a high-level policy body which draws representations from the other ministries mentioned in paragraph 6.3. This could provide a useful forum for consultation and co-ordination. However, there is no evidence that issues of poverty within fisheries are considered at the meetings. Another possibility is that usually, when an institution wishes to consult on any issues, it would call a 'stakeholders' meeting, at which the other institutions together with the private sector, are invited. However, these meetings are not regular and only touch on the issues relating to poverty in fisheries remotely.

At the local Government level, service delivery is better co-ordinated. This is because all the service departments within the district fall under the District Administration, with the Chief Administrative Officer (CAO) as the technical head. This provides opportunities for integrating services because there is one office at the top that is able to see if any sector is not operating within the goal and framework for poverty alleviation as provided for under PEAP. However, even at the District level, fisheries are marginalised and the co-ordination of services may not focus adequately to problems unique to fisheries.

Concern has been raised within PMA about weak links and co-ordination and the need to come up with consensus on demarcation of accountability among the

different public sector institutions. MAAIF and MFPED (2000) report that a review of the legal framework governing the agricultural sector should be done. "The review will define roles and avoid duplication by the sector institutions. The review should cover all key institutions" (MAAIF and MFPED 2000 p. 41).

Links between Government Ministries, the districts, private sector and local institutions are even weaker. According to MAAIF and MFPED (2000), this has been exacerbated by the policies of liberalisation, privatisation and decentralisation. The relationships between the Government and local institutions has been characterised by separation of roles, where Government would be responsible for providing the services and the local institutions were the beneficiaries. However, the demarcation is breaking down and the concepts of partnership and participation is being considered in most fields of service delivery, where the end users could participate in the planning and provision of the services as well. MAAIF and MFPED (2000) report the plans within PMA to create partnerships at the various levels, notably creation of national, regional and district agricultural development fora. They add: "A very positive environment exists for development of partnerships between the public and the private sector institutions. The PMA will take advantage of this environment and will improve on these linkages as a first step in strengthening the partnerships. Through these linkages, the different institutions will evolve mechanisms for joint goal setting, role definition, planning and monitoring and evaluation" (MAAIF and MFPED 2000 p. 44).

6.7 The Programme Approach

One way of addressing the difficulties of intersectoral links is by adopting the programme approach to poverty alleviation. Rose (1984) explains that programmes are legal and bureaucratic attempts to translate general policy objectives into specific government actions. They involve putting together government resources namely legislation, revenues and public personnel into a package of activities carried out by public organisations. The programme approach was introduced in mid 1980s as a result of limitations identified within the sectoral approach. UNDP and the World Bank have been the leading

development agencies behind the idea. Concern had been raised that poverty alleviation involved interventions beyond any single sector, requiring a holistic approach. Under the programme approach, there would be a shift to adoption of a thematic focus rather than a sectoral focus. Apart from poverty alleviation and sustainable livelihoods, other policy objectives or development themes for which the programme approach was suitable include gender equality, environmental sustainability and good governance (UNDP 1986). An advantage of the programme approach is that it ensures co-ordination amongst all activities under the theme and is more cost-efficient than stand-alone projects (Suu 2000). However, the success of the programme approach requires the participation of a broad range of stakeholders, including the Government, donors, civil society organisations, including NGOs and local communities /beneficiaries. These would be involved in organised and meaningful participation in the formulation, implementation, management and evaluation of the national programme framework and all donor-supported interventions (UNDP 1986). However, the adoption of the programme approach has often been slow due to the problem of co-ordination, as the structure of departments under most governments is along sectoral lines rather than development themes.

6.8 Conclusion

The effects of the institutional framework and social factors on poverty were analysed. The focus was on the institutions for fisheries development, provision of social services and infrastructure development. The status of local institutions was also examined to assess their capacity to contribute towards addressing the problem of poverty among their communities.

The research recognised the new role Government had assumed as a result of policy changes. Roles had also been separated between the Central and Local Governments. For each service, therefore, it was important to look at it at both levels. At the Central Government level the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), through the Department for Fisheries Resources (DFR), was one of the most important institutions with respect to poverty in the fisheries. The role of DFR was national fisheries planning,

development and monitoring of the resources as well as supporting the Local Government and private sector fisheries (MAAIF 2000). However, the limitations within DFR were identified as failure to produce fisheries policy and plans for a long period; effectively manage the fisheries resources and to establish linkages with research, Local Government and the local communities.

Fisheries Resources Research Institute (FIRRI) was the relevant research arm of the National Agricultural Research Organisation (NARO) mandated to undertake fisheries research in Uganda. Generally, however, the research had little effect on the poor because of resource constraints. Other limitations included inadequate focus towards poverty and lack of a bottom-up approach in research programs.

Local Government had the responsibility for extension services and a share of fisheries management. However, the constraints also included lack of clear extension messages to disseminate, facilities for staff and resources.

Other institutions were responsible for provision of social services including health and education. Ministry of Health (MH) had responsibility for health. However, delivery of health services has been hindered by insufficient staffing, facilities and resources for equipping and supplying the health units with drugs.

With respect to education, Universal Primary Education (UPE) was the main education policy for poverty alleviation. However, its success was hindered by inadequate classrooms; insufficient number of teachers and irregular payment for them and shortage of scholastic materials. Generally the education system did not assist by providing people with any real-life skills for livelihood, including fisheries education.

The Ministry of Works, Housing and Communication (MWHC) was responsible for infrastructure. However, the Ministry had been unable to provide sufficient access roads to fish landings, landing facilities and water transport facilities.

The Ministry of Finance, Planning and Economic Development (MFPED) was responsible for economic policies and for funding for all Government programmes. MFPED was said to have contributed to poverty through the social impacts of the Structural Adjustment Policies. It has also failed to mobilise finances for fisheries services, infrastructure and development.

Within the local communities, leadership was provided by the Local Councils (LC), the Landing Management Committees (LMC) and the Beach Leaders. However, LMC took most of the decisions related to fishery activities. In doing this, they took advantage of their local knowledge of the poverty issues and of their day to day contact with them. However, the local institutions lacked capacity, leadership and resources to effectively spearhead poverty reduction action within the communities.

A general weakness within the institutions was insufficient linkages within Government institutions and between Government and local institutions. However, there were plans under PMA to strengthen them by encouraging partnership formation. In view of the failures by the different institutions as noted in this chapter, it is concluded that the institutional framework has played a role in the impoverishment of the fishing communities. Action to reduce poverty within the fisheries would, therefore, need to address weaknesses within the Government and local institutions. It is also noted that the programme approach to poverty alleviation in fisheries could strengthen the co-ordination of the efforts between the different sectors and institutions.

THE TECHNOLOGY OF THE POOR

7.1 Introduction

The issues of technology in poverty reduction concerned availability and access by the poor to appropriate equipment and methods with the desirable effects on resource sustainability and product quality. They were about the need for suitable boats, equipment and information for better targeting of the catch. The research was, however, aware of the conflict between efficiency of technology and resource sustainability and the need to balance between the two. Adequate facilities, equipment and good practices were required for all post-harvest activities, namely landing, handling, processing, packaging, storage and marketing to ensure maintenance of quality and increase in shelf life for the product. In exploring these issues, this chapter seeks to contribute towards the research objective of understanding the factors causing poverty among the fishing communities. The research model identified technology as one of the possible factors causing the poverty. The chapter provides information on how this was happening and creates ideas that would strengthen measures to improve the technology among the poor in fisheries. It begins by examining the characteristics of the technology used by the poor within the fish production and distribution systems with a view to identifying the constraints. Types of technology available to the poor and their effects on resource sustainability and product quality would be the guiding questions for the analysis. The issues identified from the diagnostic analysis would provide a basis for identifying the needs of the poor in technology development. Government policies and programs related to technological development, covering training, extension, research and funding would be reviewed to see how they meet the needs of the poor in fisheries. The achievement of the chapter would be better understanding of the technology – poverty linkage in fisheries and ideas for improved technology for the poor. The chapter takes encouragement from Herz (1996) who stated: “There is no lack of fishing and post-harvest technologies at any scale of operation but the problem is rather that most of the available

technologies fit a particular fishing situation and market and are, therefore, not readily transferable to the very different circumstances in most developing countries” (Herz 1996 p. 2).

7.2 Characteristics of Production Technology

Many groups of the poor were identified in Chapter Five on the basis of ownership of boat, mode of boat propulsion, species targeted, gender, region of location, age, type of processing and fish trade. In order to understand their technological requirements, the degree of market orientation of their activities would have to be examined, as the need for subsistence activities were different from those of commercial production. However, this distinction was often difficult, as most fishers consumed part of their production and put the surplus on the market. The distinction was, therefore, the proportion of output that was intended for the market. The assumption was that the greater the proportion for the market, the higher the technological requirements. Put the other way round, the better the technology, the more the operator would be able to put on the market, with a better chance of moving out of poverty. Strategies to reduce poverty among the fish workers would involve targeting the market more effectively through higher production; lower cost of production and /or higher prices and technology had a role to play in each of these options.

The meaning of raising productivity in the context of Uganda’s fisheries was explored. As would be explained in Chapter Eight, there were two notable resource limitations, among others. First, much of the inshore fishing grounds were already said to be overfished. Secondly, virtually all the individual commercial species in these areas were under excessive fishing pressure. In such a situation, improved technology can at best lead to very temporary increase in wealth generation, unless there is a boost in the resource base or some of the resource users are eliminated. Government is considering both options. Under the policy on capture fisheries management, the National Fisheries Policy states: “Government shall initiate and implement stocking programs to improve the fisheries diversity and productivity of the water bodies with fish from the same waters” (MAAIF 2000 p. 11). Control of the number of users is provided for

under the open access policy, which says: "Control over-fishing by limiting the total number of fishers and quantity of gears allowable" (MAAIF 2000 p. 12). However, neither policy has been implemented and it is not clear how soon they will be. The other option for increased productivity would be extension of fishing operations into the offshore areas that were not yet so heavily fished. The technology on Lake Victoria was examined to assess the capacity within the fishery to extend operations into the offshore fishery. The boat was the key to this technology. During the research survey, some 7.2% (N=671) of the respondents involved in fish production were involved in non-boat fishing activities. Their gear consisted of nets, hooks, baskets and other forms of traps that could be operated within the shallow waters without the use of a boat. Although they formed a small proportion of the fishing units, they were one group that could definitely not extend their operations out of the inshore grounds, said to be over-exploited. The next step was to examine the boats in use. Respondents were asked to provide information on selected characteristics of up to two of their boats. The data were analysed using Multiple Response frequency computation as explained under methodology in Chapter Four. They revealed that of the boats sampled, 77.8% were 'sesse' type, 20.8% 'parachute,' 1.0% 'dug-out' and 0.4% 'others'. The Lake Victoria Fisheries Frame Survey 2000 (LVFFS) collected data on types of boat. The bar-chart presentations provided under the LVFFS showed the same order of magnitude for the different types of boat (LVEMP 2001 p. 9). The 'parachute' and 'dug-out' boats were designed for inshore fishing and were unsuitable for offshore fishing. These were also the boats of the poor. Over 20% of boats fell in these categories and were, therefore, technically incapable of increasing productivity through extending their operations to the less exploited offshore fishing grounds. The survey further showed that almost all the fishing boats were made of wood as steel or fibre-glass boats were almost absent in the fishery. Boats have often broken up in the strong offshore waves, causing loss of life because they were made of wood. The lack of use of more dependable materials like steel or fibre-glass in construction of fishing boats also limits their deployment into the offshore fishery. The situation requires careful consideration because on the one hand, caution has often been expressed about the capacity of artisanal fishers to use exogenous and expensive technologies. On the other hand, the existing

technology has become such a constraint and there is need to find a way forward. Information was also obtained on the length of the boats during the research survey. The average length was seven metres, with 79.6% of the boats in the sample not exceeding eight metres in length. Boats of eight metres and below were considered unsuitable for offshore fishing activities, because they were not 'lakeworthy' and their carrying capacity was too low for offshore fishing operations.

The proportion of motorised boats to the total fishing boats as calculated from the LVFFS data was 13.1% for Uganda. Hand paddled boats were considered unsuitable for exploiting offshore grounds, because of the distances involved and the rough waters encountered. The low proportion of motorised boats was a limitation to the majority of the fishers in exploiting the offshore fishery resources. Data were also collected on the power of the engines reported during the research survey. The engine power was found to range from 5 to 65 HP but the most frequently occurring were 15 HP and above (65.3% N=115), as shown in Table 7.1

Table 7.1: Proportions of Engines by Capacity:

HP of Engine	Percentage
15 and Above	65.3
10 – 14.9	4.3
5 – 9.9	30.4
Total	100

Source: Survey Data

From the information provided by the fishers, the engines suitable for offshore fishing were 15 hp and above. More of the engines in use were, therefore, suitable for offshore fishing. However, engines were not part of the technology accessible to the poor, because of the costs involved.

The years when the boats and engines were acquired were recorded during the survey and are presented in Table 7.2. The table showed that for boats as well as engines, more were acquired in 1996 and after than before. Operators reported

during the research that four years was the expected lifetime for boat and engine, after which they would become unreliable and uneconomic to operate. It was, therefore, concluded that most of the boats and engines were still within their normal working life. The little proportions of older boats and engine could also indicate difficulties of maintenance for these types of equipment, so that they had to be replaced more frequently rather than maintained.

Table 7.2: Proportions of Boats and Engines by Year of Acquisition (%):

Year of Acquisition	Proportion of Boats N=684	Proportion of Engines N=115
2000	2.5	-
1999	23.1	13.0
1998	25.1	28.7
1997	18.9	22.2
1996	11.5	13.0
1995	6.4	4.6
1994 and Earlier	12.5	18.5
Total	100	100

Source: Survey Data

Information on types of fishing gear in use was derived from the frame survey data. Table 7.3 gives a summary of the mesh-size distribution of the gill nets on use. Two points were noted from the information. First, some 18.3% of the gill nets were below the 127 mm legal minimum mesh-size, indicating the magnitude of the technology that was a threat to resource sustainability. Secondly, it was reported that for offshore fishing, gill nets of above 178 mm were appropriate. The data showed that only 5.9% of the gill nets were above 178 mm, so the bulk of the gill nets in use were not appropriate for extending into the offshore fishery and increasing productivity.

Table 7.3: Distribution of Gill Nets by Size:

Mesh Size (mm)	No. of Gill Nets	Proportion of Gill Nets (%)
Below 127	54,454	18.3
127 – 178	225,601	75.8
Above 178	17,607	5.9
Total	297,662	100

Source: Data from LVEMP (2001)

Information on the other types of gear were also examined and summarised in Table 7.4. In addition to what has been said of gill nets, all the other types of gear, except for the long lines, totalling to 35.9% of the fishing boats, were for inshore fishing and unsuitable for extension into the distant waters. Secondly, out of these, beach seines, cast nets, fish traps and mosquito seines of below 10 mm mesh-sizes were prohibited gear for their effects on resource sustainability.

A general and important characteristic of all the gear types was their poor targeting ability. This refers to the situation where a set gear may not catch any fish. Improved targeting would reduce the cost per unit of catch, an advantage which was lacking in the technology. This was also reflected in the uncertainties in production, leading to increased risk in the production activities, a dimension of poverty. Further risk also arose from the unlakeworthy vessels widely used as reported here. All ‘parachute,’ ‘dug-out’ and other boats of less than eight metres constituted extremely risky fishing technologies.

There was also a health dimension to the technology. Mention has been made of the increasing health hazards associated with the water environment of Lake Victoria, notably the bilharzia infestation as well as malaria. The non-boat fishery activities cited above involved long exposure of the operators to the direct water contact. As a result of lack of knowledge and resources, these activities are carried out with a minimum of protective gear or precautionary measures. People have increasingly suffered infection from these diseases. Other dangers included the snakes, crocodiles and hippopotamuses frequently encountered in

the fishing process. Health threat was, therefore, another poverty dimension associated with the technology.

Finally, there was a gender problem related to the fishing technology. The boat and gear types were said to be unsuitable for use by women. This has added to the cultural restrictions on women to do fishing, denying them income opportunity in direct fishing.

Table 7.4: Deployment of Boats by Type of Gear:

Type of Gear	Number of Boats	Proportion of Fishing Boats (%)
Gill nets	9,770	59.1
Long lines	821	5.0
Beach seines	801	4.8
Cast nets	1,244	7.5
Hook and liens	830	5.0
Fish traps	557	3.4
Mosquito seines	2,446	14.8
Other gear	66	0.4
Total	16,535	100

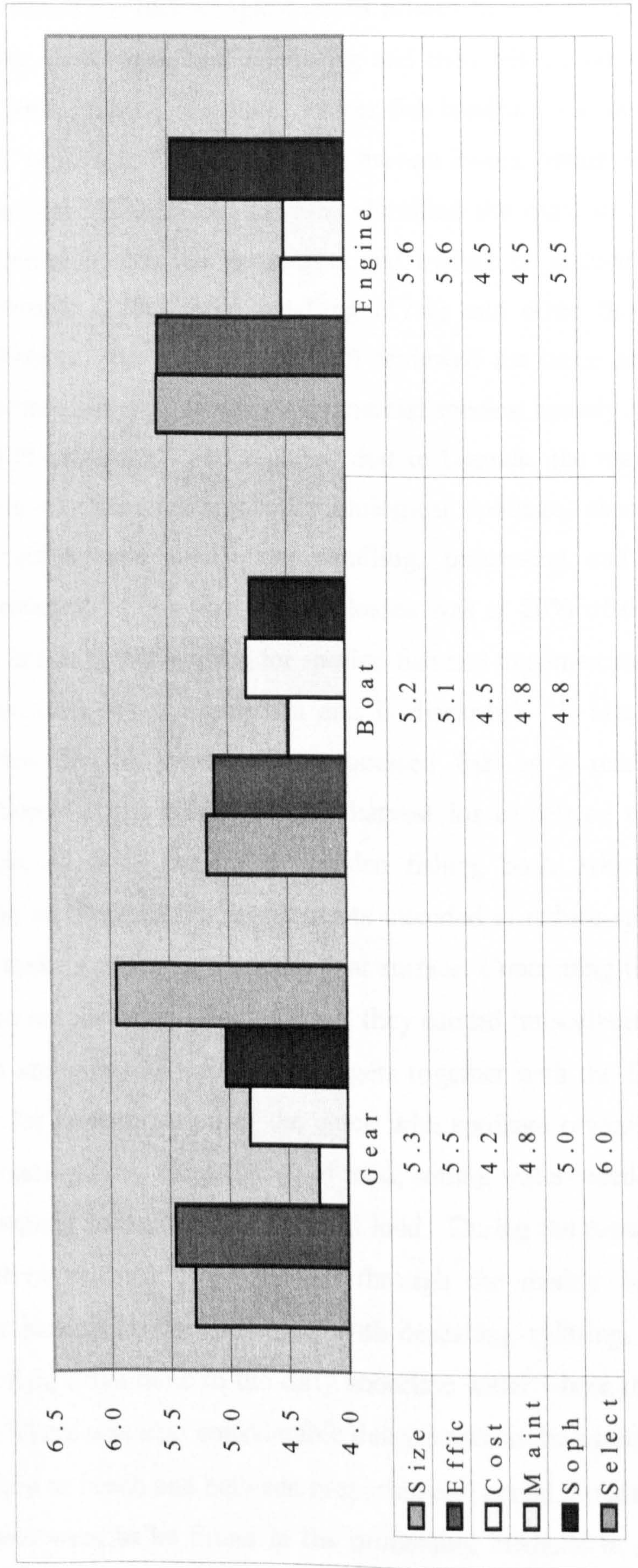
Source: Data from LVEMP (2001)

The research examined how the fishers perceived of their technology. Respondents were asked to rate the major equipment used in fishing, using a one-to-ten point-scale, with 5 being the switching point from dissatisfied to satisfied. The equipment rated were gear, boat and engine. The attributes rated were size, efficiency, cost, ease of maintenance, level of sophistication and selectivity on species. The attribute of selectivity was not considered for boat and engine. The mean rating for each attribute was calculated for each type of equipment and the results were summarised and presented in Figure 7.1. The main outcomes of the exercise were that concerning gear, respondents were satisfied with the selectivity, size and efficiency. They were, however, dissatisfied with cost and

the maintenance. Their rating of boat revealed some satisfaction with size and efficiency but great dissatisfaction with cost and maintenance. Ratings of the engine were generally higher than the other equipment, but like the others, respondents were unhappy with cost and maintenance aspects. This was a simple exercise but valuable at identifying broadly the aspects of the main equipment that needed to be addressed. The indication was that, generally, costs of equipment and their maintenance were the greatest constraints with the equipment.

The summary from the analysis of production technology was that the equipment used by the poor were unsuitable for increasing production through extension of fishing grounds, expensive to acquire and maintain and were largely destructive to the fishery resource base. Details of the methods applied in fishing will be described in Chapter Eight on resource availability, but generally they were also unsustainable and consequently banned. In addition, the technology caused a status of risk among the fishers and was associated with ill-health in the community. In the paragraphs that follow, the chapter examines the technology among the poor in the post-harvest fisheries.

Figure 7.1: Mean Ratings of Selected Equipment by Attribute:



Source: Survey Data

7.3 Fish Processing and Distribution Technology

The research examined the technological issues related to post-harvest fisheries, including handling, processing and marketing and their effects on fish quality and post-harvest losses among the poor. Proper fish handling was important for safe consumption as well as to minimise post harvest losses, obtain better prices and improve earnings. SEDAWOG (1999a) identified the main causes of fish spoilage, as perceived by the fish processors and traders, to include rain (36% N=402), poor storage (22%), poor handling (17%) and other factors (26%) (SEDAWOG 1999a p. 56). Masette (2000) reviewed the basic principles of reducing post-harvest losses in the main commercial species, namely *L. niloticus*, *O. niloticus* and *R. argentea*. She reported that in Uganda, the main cause of losses in post-harvest fisheries was microbiological spoilage, exacerbated by inappropriate practices and inadequate handling, processing and packaging facilities. Her estimate of the post-harvest losses was at 20% of the value of catch. This loss is due to fall in price for spoiled fish and in some cases, fish that has become unsuitable for consumption and is discarded. It also represents lowering of price due to breakage of processed fish as a result of poor transportation. Some of the causes of post-harvest losses related to handling, including the use of small unpainted wooden fishing boats which were ill-equipped to cope with regulatory requirements intended to reduce spoilage. The painting would make it easier to wash the boat surface. Concerning the transport boats, these were not insulated. Furthermore, they carried 'miscellaneous goods' such as chicken and goats as well as passengers together with the fish and this was a potential for contamination of the catch with spoilage organisms (EPRC 1999). At the landing sites, the presence of mud, rotting water-weeds, animal as well as human wastes increased the microbial load. During the research, fishers were sighted throwing and dragging fish through the muddy beach water. Preparations for processing the fish began with descaling, splitting, gutting and washing of the fish, often done in the dirty shoreline water where the microbial load was high. There was also considerable delay between the capture of fish in the nets and return to beach and between preparing and actual processing of fish. Other weaknesses were to be found in the processing methods in use, in road transportation and within the marketing system.

The artisanal processing component of the fisheries sector was important on the research not only for its role in reducing contamination and post-harvest losses but also because it was heavily occupied by the poor, as noted in Chapter Five. The activities were mainly undertaken by the communities at the landing sites, using indigenous techniques to process small quantities of fish at a time. Abbot (1988) explained the importance of processing in fisheries in order to preserve the products over substantial periods of time and make them more convenient to use. In processing, there was a change of form, as distinct from the cleaning, sorting and chilling of fresh fish, involving the use of specialised equipment, assuring the necessary sanitary and other conditions. Investments were involved and there was need to make careful choice of raw materials to meet the requirements of the technical processes and of the consumers, all within prices that would allow operation at a profit. He contended that potentially, the processing enterprise could be a powerful engine of development as it provided profitable outlets, added variety to popular diets, made food available at times when otherwise it would be lacking and earned foreign exchange. Beck and During (1986) presented an appraisal of the technical, social, environmental and economic effects of the introduction of improved technology in the development of village-based fish processing methods in Sierra Leone. Their findings were that although the traditional techniques were less economic than the improved methods, they played an important role in the social fabric of the fish processing family and the fishing community. However, it should be noted that although ice is desirable for conserving fish, the infrastructure requirements, namely ice plants, clean water, containers, roads, chill store and vehicles are costly, making it uneconomic for artisanal communities.

The research examined the main types of artisanal processing on Lake Victoria to identify the key features of their technology. There were four main factors determining the need to process fish using one technique or another. These included failure to sell the fish in the fresh form on a particular day; difficulties of accessibility to markets owing to poor infrastructure or long distances involved; the small size of fish that required processing before consumption and market preferences for the different processed products.

Doe (1986) examined the principles of fish drying and spoilage to provide an understanding of the physical and biological processes involved in fish drying, necessary for developing new cost-effective processing techniques. Clucas (1981) provided the broad aims of fish preservation and processing. In his explanation, fish spoilage was an inevitable biological process but took place faster under certain optimum conditions. Therefore, altering the conditions through preservation and processing activities could provide ways of slowing or reducing spoilage. Bostock *et al.* (1987), in defining processing, said: "The objective of processing is to *render the causes of spoilage inert*, that is, to slow bacterial action and any autolytic changes which are occurring, and to prevent contamination by insects and other pests" (Bostock *et al.* 1987 p. 7). A common element of the different processing methods was that of drying or reducing the water content in the fish flesh, in addition to temperature control. Lupin (1988) provided an analysis of the effect of water activity in preservation of fish products. He pointed out the need to integrate both the physico-chemical aspects of water activity and its effect on micro-organisms. Horner (1997) reported that although drying, salting and smoking had been in use as preservation techniques virtually unaltered since prehistoric days, even modern developments had continued to centre around controlling the same variables to achieve the standardised products demanded by today's market.

On Lake Victoria, the processing methods used by artisanal processors included sun-drying, smoking, salting and frying. Various indigenous technologies were available, embedded in the different tools in use. Sun-drying was quite common, targeting mainly the pelagic fish, namely *R. argentea* and the haplochromines. This was because of their small size and the market preference (Ssali, Reynolds and Ward 1990). Some tilapine species were sun-dried in the split-form, locally referred to as "bambala," and were intended mainly for the Kenyan market. For the small-sized fish, they were dried whole and were spread out on rocky or sandy surfaces while drying. Disadvantages of drying on the ground were outlined in Bostock *et al.* (1987). They included the fish becoming dirty with dust and sand; animals such as chickens, dogs and rats having free access to it; the conditions being generally very unhygienic and the rate of drying slow. In the case of the tilapine and the other larger species, they were split open to

increase the surface area and dried on racks. The use of racks had been recommended for sun-drying all types of fish. They could be made of reeds or other locally available materials, raised about one metre from the ground and either made flat for the small-sized fish to avoid falling off, or sloping for the bigger fish to allow faster dripping of the water (Bostock *et al.* 1987). The advantages of using drying racks were that drying could take place on both sides simultaneously; reduced contamination from dirt, sand and animal pests; avoidance of possible damage by ground water; increased drying rate because of greater air movement away from the ground and possibility of protecting from rain by covering with plastic sheeting. Clucas (1981) gave the advantage of sun-drying mainly in the free energy from the sun. However, the method was considered risky particularly during rainy seasons, due to failure of the product to dry but to rot instead. Some of the sun-dried fish was also salted, particularly the products bound for the external market of the Democratic Republic of Congo, as salted fish was not popular with most Ugandan consumers (FCSEP 1997). The tilapines were split open while *L. niloticus* was filleted to increase surface area. The fish was sprinkled with salt then spread on bare ground for drying, lasting three to five days, depending on the species and the weather. However, because it did not absorb sufficient salt, the product could not keep long. There was need for leaving the fish in brine for about one hour prior to spreading it to dry (Masette 2000). Another problem with the practice was that the products were exposed to different contaminants, including animal and bird waste and sand. Losses connected with the method included direct consumption by animals and birds and fragmentation. Roberts (1988) discussed the methods of fish salting, explaining that the most important effect of salt was the removal of water from the flesh to the point where microbial and enzymatic activities were retarded. This process of dehydration was due to the different concentrations between the weak salt solution inside the fish flesh and the high concentration outside. As water was withdrawn from the fish due to an osmotic gradient, salt penetrated the tissues. Clucas (1981) explained the salting process, used in conjunction with drying and smoking. The salt was rubbed into the flesh of the fish or the fish placed in brine and allowed to drip. As most bacteria could not grow in concentrations of above 6 percent, salting would, therefore, reduce bacterial action. Bostock *et al.* (1987) added that salt deterred most insects and

inactivated most autolytic enzymes. In order to work properly, however, the salt had to be allowed to penetrate the tissues quickly. Rapid salt penetration could be enhanced through splitting and cutting any thick fleshy parts to maximise the exposed surface area. The authors also described the two methods of salting, namely spreading on the fish surface and brining.

During the research 15% of the respondents involved in fish processing reported being involved in salting and/or sun-drying, as given in Table 7.5, found mainly in the districts of Masaka, Mukono and Iganga. The two processes were merged into one because all the salted fish was sun-dried and the only sun-drying which did not involve salting was for *R. argentea*. Their assets were simple, consisting mainly of drying racks. On average, a processor owned 1.3 racks, as shown in Table 7.6. The racks were not standard in size or materials used, so the costs varied but on average, it was UShs 58,000. Respondents rated the drying racks poorly with respect to size, efficiency and cost on a one-to-ten scale, as given in Table 7.7.

Table 7.5: Types of Fish Processors by District (%):

District	Smoking	Salting & Sun-drying	Frying	Other	Total
Bugiri	75.0	12.5	12.5	0.0	100
Iganga	84.0	16.0	0.0	0.0	100
Mukono	75.0	20.8	4.2	0.0	100
Kampala	100.0	0.0	0.0	0.0	100
Mpigi	100.0	0.0	0.0	0.0	100
Masaka	26.7	53.3	0.0	20.0	100
Kalangala	94.7	5.3	0.0	0.0	100
Overall	80.8	15.2	1.6	2.4	100

Source: Survey Data

The average quantities of fish handled per week through salting and sun-drying were 93 kg for *L. niloticus* and 427 kg for *R. argentea*, as presented in Table 7.8. The operations were reported to experience little variations over the months of the year, as depicted in Figure 7.2. The figure presents the means of the rating of processing activity levels for each of the months of the year by the respondents involved in the different fish processing types.

Table 7.6: Average Number and Value of Equipment used in Fish Processing:

Equipment	Average Number	Average Value (Ushs)
Smoking Pit/Kiln	1.1	59,000
Drying Rack	1.3	58,000
Frying Oven	2.5	9,000
Basket	2.6	5,000

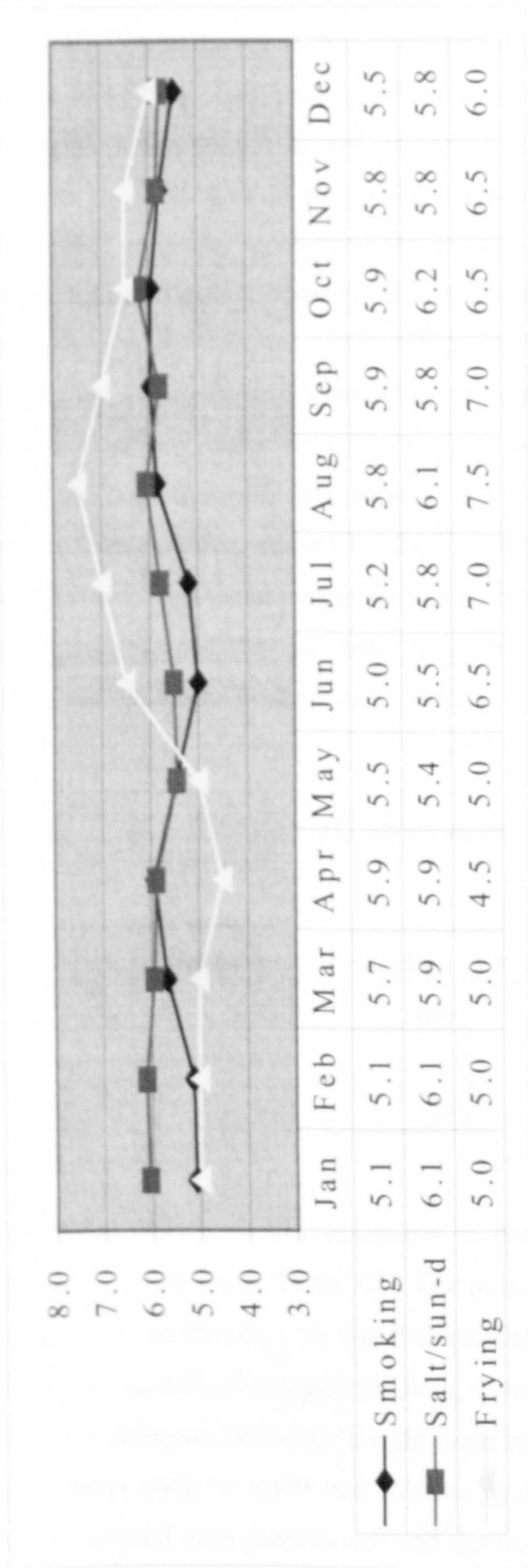
Source: Survey Data

Table 7.7: Respondents' Rating of Processing Equipment:

	Size	Efficiency	Cost
Smoking Pit/Kiln	4.9	5.3	4.8
Frying Oven	4.5	4.5	6.0
Salting Tub	6.0	6.0	6.0
Sun-drying Rack	3.3	3.7	3.5

Source: Survey Data

Figure 7.2: Perceived Levels of Processing Activity During the Year:



Source: survey Data

Smoking, was the second method of processing examined. It was the most commonly used local processing method, as shown by Table 7.5 and was practised at many landing sites because of their inaccessibility to markets of fresh fish (Reynolds and Ssali 1991). Lupin (1988) explained that smoked fish could be considered *prima facie* dried fish because of its water activity since the main reason for its stability was in the drying process. Clucas (1981) added that smoking fish, over open fires or in simple kilns using wood or some locally available combustible products, accelerated the drying process and could be the main processing method in places where relative humidity was high and salt was scarce. Despite the drying effect, the smoke effect should not be disregarded in the smoking process. The smoke compounds have a bacteriostatic action and reinforce the action of low water activity value on the fish's surface (Lupin 1988). Some of the problems with fish smoking that could contribute to losses included physical fragmentation, caused by the high temperatures to which the fish might be subjected; high temperatures leading to charring and burning of the flesh and recontamination of the fish with bacteria on cooling down if the moisture content was still high (Bostock *et al.* 1987).

Table 7.8: Average Weekly Quantities of Fish Processed (kgs):

	<i>L. niloticus</i>	<i>O. niloticus</i>	<i>R. argentea</i>
Smoking	200	169	--
Salting/sun-drying	93	--	427
Frying	26	20	--

Source: Survey Data

From the survey data, 80.8% of the processors in the sample reported being involved in smoking, as shown in Table 7.5. The process involved the use of a smoking pit or kiln. In the former, a pit was dug into the ground, deep enough to accommodate the fire as well as the entire smoking structure below the surface of the ground. The structure would include a weld mesh tray, supported halfway up the pit and provisions made to insert two to three more trays, laden with fish. The top would be covered with papyrus mat and the smoking process lasted one

to three days. An improvement of this was the construction of the elevated kiln, resembling a table. This was built with bricks or sticks and mud, with a steel mesh top on which the fish was laid. The disadvantages of the traditional processing kilns included inefficient use of fuel, especially given the growing scarcity and cost of firewood; difficulty of regulating the fire for uniformity in the smoked product, resulting in a product that was often dark in colour, not uniformly smoked and brittle; possible adverse effect of weather; low capacity and the need for constant attention to keep the fire burning and control the smoking process (Bostock 1987). Some of the useful steps in good smoking but usually missed included salting of the fish in concentrated brine for about 30 minutes to prevent invasion of the product by the common spoilage bacteria; drip-drying for about one hour before loading on to kiln trays to allow excess surface water to evaporate and the salt to combine with the proteins; use of several trays for economy and fitting of a smoke spreader to allow uniform distribution of the smoke within the fish (Masette 2000).

Smoking was carried out mostly in the Districts of Mpigi, Kalangala and Iganga mainly due to the remote situation of the landing sites. Busia and Jinja exhibited the least smoking due to the ready market for fresh fish, but in different ways. In Busia, the fishers were able to sell their catch to Kenyan traders on the lake. In Jinja, the landing sites were accessible and near to Jinja town, so the fishers could easily sell the fish fresh. Most processors involved in smoking owned one smoking pit or kiln, as shown in Table 7.6. It was noted during the survey, however, that there was a practice of renting out a kiln to another who did not own one, at a fee payable per batch of fish smoked. The pits and kilns were not standard in size but on average were valued at US\$ 59,000 (N=94). Respondents rated the drying racks poorly with respect to size and cost but were a little more satisfied with its efficiency using the one-to-ten scale, as given in Table 7.7. The average quantities of fish smoked per week were 200 kgs for *L. niloticus* and 169 kgs for *O. niloticus*. The activities fluctuated mildly through the year with a peak in April and another in October, as shown in Figure 7.2.

The frying method of processing was also in use. It applied to small portions of *L. niloticus* usually off-cuts from fish factories or its juveniles. It was common in the suburbs of major urban centres because it was more affordable and

convenient to the direct consumers (Dhatemwa 1988). Fat from the *L. niloticus* was used in the process, substituted for cooking oil, which had become increasingly expensive. The main limitation of the process was that the product did not keep long and was meant to be consumed the same day. The raw material from the processing plants was also poorly handled. A general problem was that as the consumers of the product were poor, scope for improvement was also limited.

At the marketing stage, quality concerns were also observed with the transportation vehicles. Usually, fresh fish was transported by pick-ups while processed fish was ferried by lorries. Similar to transport boats, the vehicles also carried 'miscellaneous goods' in addition to fish. These included charcoal, foodstuffs and spare tyres and finally, the traders sat on the goods, which were stacked high. There were, therefore, dangers of contamination as well as of fragmentation due to the pressure on the fish, resulting into losses to the traders. At the market, fish stalls were often located near an open sewer, waste disposal bin, charcoal stalls and lavatories, all of which were potential sources of contaminants. Furthermore, the display tables, the chopping and scaling knives, gunny bags for covering the fish were not kept sufficiently clean as most fish stalls had no cleanable or disinfectable facilities or access to potable water. Even some of the handlers of the fish often did not keep sufficiently clean.

To sum up on the observations made, the post-harvest technology in artisanal processing and marketing contributed to poverty through its failure to ensure fish quality and minimise product losses. The post-harvest losses constituted a source of risk in the operations, similar to that in fishing. Furthermore, continuous exposure to smoke was regarded as a health hazard. Technological constraints were identified in inadequate know-how and poor practices among the operators, limited resources at their disposal and lack of infrastructure and facilities.

Concerns about infrastructure for fisheries in Uganda had earlier been raised by EPRC (1999) as follows: "Poor infrastructure remains a constraint to much of Uganda's economic activities, especially the marketing of agricultural and other goods in the economy. For the fisheries sector, poor infrastructure at the landing sites leads to poor quality fish, and poor roads lead to high transaction costs (transport cost, wear and tear, time loss) which taken together translate into a loss

of efficiency and possibly higher prices to the consumer or lower profits to fishers” (EPRC 1999 p. 183). To give an overview of the infrastructure and facilities available at the landing sites, the data from LVFFS were analysed and a summary presented in Table 7.9.

Among the facilities usually strongly recommended are potable water, ice, waste disposal mechanisms, landing piers, raised platforms, shades and disinfectable facilities (Masette 2000 p. 4). However, these are among the least available at the landing sites, due to the enormous investment costs involved, coupled with the high rates of failure. Generally, except for access road, facilities provided by the public sector were minimal. Private sector facilities, however, were more readily available, including net and boat repair facilities, each available at 37% of the landing sites. Districts with the least public facilities included Mukono, Bugiri, Rakai and Jinja while those with higher proportions of public facilities were Busia, Kalangala, Kampala and Mpigi. Districts with the lowest proportions of landing sites with private facilities included Busia, Jinja, Kampala and Mukono while Rakai, Iganga, Kalangala and Mpigi had better private facilities.

To sum up the findings on the fisheries technology, it could be said that the technology used by the poor in production was of limited productivity, mainly because of its low range of operation, unable to exploit the distant under utilised resource. Much of the equipment and techniques in use threatened the sustainability of the resource, a problem attributed to lack of resources and inadequate awareness. Processing technology was limited with respect to minimising post-harvest losses and contributed little towards improving product range. Throughout the commodity chain from production to marketing, product quality assurance was inadequate, due to insufficient knowledge, poor technology and limited infrastructure, facilities and services. The technology of the poor in fisheries was, therefore, characterised by limited productivity, poor product quality and unsustainable resource exploitation. This conclusion, therefore, forms the basis for the subsequent analysis aimed at improving the technology among fishers on Lake Victoria to bring the poverty under control.

Table 7.9: Proportions of Landing Sites and their Associated Infrastructure (%):

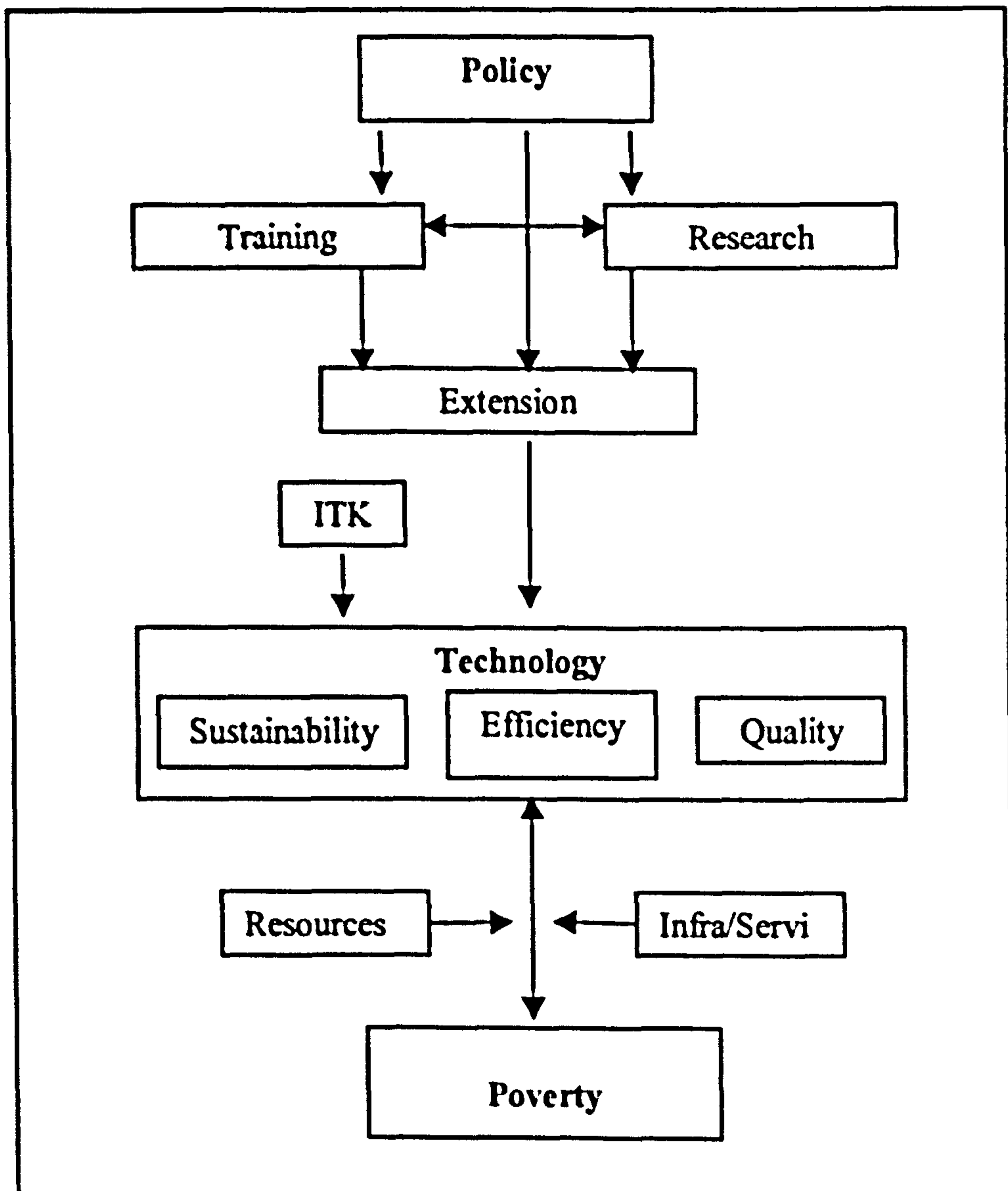
District	Landing Sites (Number)	'Bandas'	Cold Rooms	Jetties	Electricity	Fish Stores	All Weather Roads	Boat Repairs	Net Repairs
Busia	4	25	0	25	0	25	100	0	0
Bugiri	74	14	0	5	4	5	7	38	38
Iganga	63	13	0	0	2	5	48	67	67
Jinja	24	4	0	4	17	4	50	13	13
Mukono	240	3	1	5	3	1	10	20	20
Kampala	6	0	0	0	17	0	83	17	17
Mpigi	57	11	5	9	11	7	53	47	47
Masaka	30	20	0	3	3	13	40	47	47
Rakai	7	14	0	0	0	0	43	71	71
Kalangala	92	17	1	11	0	64	14	58	58
Total	597	9	1	6	4	13	23	37	37

Source: LVEMP (2001) Data

7.4 Poverty Considerations in Technological Development

From the analysis in the first part of the chapter and the constraints in fisheries technology identified, it could be said that the poor needed improvements in their technology towards greater efficiency and more responsiveness to resource sustainability and product quality. The needs would include improvements in tools and methods; knowledge and information; resources, infrastructure and services. A schematic representation of the factors influencing the relationship between technology and poverty is provided in Figure 7.3

Figure 7.3: Factors in the Technology – Poverty Links:



The research examined the various measures in place to assess their relevance and effects towards addressing the technological concerns of the poor fishers, beginning from the policy framework, upon which training, extension and research programs and projects were based. In this section, therefore, the Government's broad policies relevant to fisheries technology were identified. The status of training, research and extension were then reviewed, with a view to assessing how they fitted with the overall Government policies and addressed the issues of poverty among the fishing communities.

The fisheries technology development policies are derived from provision within PMA, which is part of the Government's broader strategy of poverty eradication contained in the Poverty Eradication Action Plan (PEAP). One of the key elements of PMA is promotion of technology change to enhance productivity and this is considered relevant towards addressing the technological constraints in the fisheries. The proposed strategy to achieve this is through supporting the dissemination and adoption of productivity-enhancing technologies. MAAIF and MFPEP (2000) explain that the priority areas of intervention identified to achieve this included delivery of advisory services to farmers; knowledge and skills for agricultural transformation; product processing and marketing; research for smallholders to develop and promote productivity-enhancing technologies; collection of statistical data, production and marketing information which are necessary for planning and analytical purposes and construction of fish landing sites to facilitate fish handling, quality control and monitoring. Roles for the different key players were also identified. The public sector would be limited to creating an enabling environment for the peasant to prosper, namely through setting policies, removing barriers at all levels, putting in place commercial laws and an appropriate legal and regulatory framework and funding, in brief, providing those services that were of 'public good' in nature. Local Governments would manage systems for financing and delivery of agricultural sector services in partnership with a wide range of local and external stakeholders including NGOs, CBOs, the private sector and the donor community. The private sector would undertake production, processing and marketing of products. Among the other relevant provisions of PMA, investment would be made in rural infrastructure particularly in feeder roads, cost effective irrigation and water

harvesting techniques, rural electrification, telecommunications, rural market development and other supportive services. Institutional reforms in the public sector would be undertaken, in order to improve service delivery such as provision of rural water, agricultural extension services, etc. There would be provision of rural finance through sustainable methods including community-based rural finance organisations. Agro-processing and marketing would be promoted and the National Agricultural Advisory Services would be created to co-ordinate service provision to subsistence farmers. Generally, the strategy includes the main technological requirements for the fishers, namely knowledge, research, resources, infrastructure and services. The challenge is that this is an ambitious strategy and may not be effectively implemented at the different levels.

The research examined the level of fisheries education that had been received by the fishers, processors and traders. It was important that people involved in the different activities within the sector should have adequate fisheries education as part of a broader human capital necessary for development. This would enhance their capacity to produce, manage, process, market and sustainably utilise the resource. The starting point was, therefore, the basic education. Chapter Five examined the levels of educational achievements among the fishers and noted that although reported literacy level was high at 88.9%, most people did not go beyond the primary school level and were, therefore, not really “educated”. Furthermore, even for those who received secondary and tertiary education, there was generally little ‘fisheries education’ content to the general schooling in Uganda. For some decades, schools had been offering ‘agriculture’ as one of the subjects. However, the syllabus did not include fisheries knowledge beyond occasional mention of the subject as an area of agriculture. The nearest to fisheries knowledge was the biology and ecology of fish, treated to different depths at different institutions. The educational system did not offer skill in fisheries practices. Generally, therefore, people were operating in the fisheries with little formal schooling on fisheries. Indigenous Technical Knowledge (ITK) had formed the basis of knowledge and technology in the sector.

Training in fisheries technology had been provided by the Fisheries Training Institute (FTI), an institution which since its inception in 1975 belonged to the

Fisheries Department but had recently been transferred to the Ministry of Education and Sports, under the program of Rationalisation of the Civil Service. Available data showed that FTI trained about 100 fish technologists at certificate and diploma levels between 1975-1993. These were to assist artisanal processors, through extension, in the implementation of improved handling and processing practices and facilities (Dhatemwa 1980). The course content included elementary stages of fishing gears and methods, fish handling, processing, post-harvest losses, fish quality and preservation methods. As part of a diploma-training program, each student was expected to identify and carry out a relevant research project in the field of fish technology (FTI Prospectus 1980/81). Although the training was still being offered by FTI, the demand for it had become low due to the freeze on recruitment into Government under the Civil Service Reform. The industrial processing firms within the fisheries private sector had employed some of the graduates but job opportunities were limited due to control on expansion as a regulated sector. Dhatemwa (1980) concluded that despite the training and extension provided, technological development in artisanal fishing and fish processing in Uganda had remained stagnant over the years because of insufficient funding and other socio-economic factors. A major limitation of the FTI technology training was that it did not prepare trainees for private sector participation in the fishing industry, but rather as 'job seekers' but many of them failed to find a job. FTI also had no capacity to offer a program of direct training, through short courses, to the people involved in the artisanal fisheries. Other constraints, as identified within the National Fisheries Policy, were that FTI lacked trained fisheries scientists to teach the courses and was still in the process of updating its curriculum to cover all aspects of fisheries management, including aquaculture. The Institute also planned to introduce a postgraduate diploma in fisheries (MAAIF 2000 p. 21).

It was also important to mention the role of Makerere University with respect to fisheries training. The Zoology Department at the University was offering a Master of Science course in fisheries and aquatic sciences, with modules on fisheries management and development, fish biology and ecology, limnology, socio-economics and aquaculture. However, the course was said to lack basic facilities and adequate financial support (MAAIF 2000 p. 22). Students going for this

postgraduate course as well as those recruited into Government service as Fisheries Officers would have done a general Bachelor of Science Zoology course. From the 2001/02 academic year, however, there were plans to introduce a Bachelor of Science in Fisheries degree course in the Department. In order to contribute towards strengthening facilities for environmental analysis and graduate teaching, LVEMP was implementing one of its components at the University. The project was financing vehicles and boats; office and laboratory equipment, chemicals and reagents; books and subscriptions to journals and operation and maintenance expenditures.

In response to the inadequate knowledge and training situation in the fisheries, the National Fisheries Policy pledged to develop capacity at national, district and private sector levels to improve skills in the fisheries sector. The strategy under this policy recognised the need to involve the managers of the local community organisations in the training programs. However, it was noted that there was lack of properly organised fisherfolk leadership to implement community-based programs. Some of the existing fishermen organisations and co-operative groups were beginning to be active in mobilisation of communities for fisheries management and development. The Policy pledged to strengthen these organisations by involving their leaders and the communities they represented in the main training programs in fisheries (MAAIF 2000 p. 22). The main fishermen organisation was the Uganda Fish and Fisheries Conservation Association (UFFCA), established to develop the participation of fishing communities in the effective management and development of the fisheries resources. The role of UFFCA was said to be complementary, acting as a partner in development with MAAIF, the Local Governments and the Donor Community. The Association had involved the community members in developing community-based programs on the major water bodies of the country. Since 1976, UFFCA was reported to have been educating the fishing communities on improved technologies of fish handling, processing and storage. It was also working closely with FIRRI to assist in disseminating to the clients whatever technologies and information were generated by research, making use of its structure at the grassroots (Kamuturaki 1998).

In summary, therefore, in order to enhance knowledge in the fisheries, fishers needed to be encouraged to take advantage of UPE to attain basic education and

proceed with secondary and tertiary education as well to improve their human capital. It is recommended that fisheries knowledge be built into the general education as an option for districts on the lake. Strengthening of FTI should continue and be broadened to provide high level training for both the public and private sector fisheries. Development of the Institute should be co-ordinated with that of the Zoology Department at the University so that between them, they could provide adequately for the training needs for teaching, research, fisheries management and fish business. The curriculum at each level should emphasise both theory and practical application. The training could also take a broader view and form part of a program to develop vertical integration in the fisheries. Other components of the program would include infrastructure and technological development. This would not only reduce the constraints in the post-harvest fisheries but also help other people to move out of direct fishing. Fisheries training has been missing at the Local Government level. There is need to implement the relevant provisions of PMA and of the National Fisheries Policy by establishing courses at district level to train for the private sector operators. Lastly, the civil society should be encouraged and strengthened to participate fully in the training programs. Requirements under these recommendations include training personnel, establishing the infrastructures and facilities and funding the courses. Budgetary provisions would be necessary at both the Central and Local Government levels to achieve this. Donor support to the fisheries should provide adequately for the training in the industry.

Extension referred to the delivery of a technology package to the target beneficiaries. In the PMA, technology was defined to include improved methods and inputs as well as information, skills, knowledge, attitudes and aspirations (MAAIF and MFPED 2000). Oakley and Garforth (1985) explained the concept of extension as an educational process which worked with rural people over a period of time, supported them and prepared them to confront their problems more successfully. In addition to knowledge and information, they suggested that extension would also include helping to set up farmers' organisations to serve as a channel for disseminating information and knowledge and to motivate them and instil a sense of self-confidence in them.

During the research, respondents were asked if they had received fisheries extension services from Government or NGOs and 67% (N=466) of respondents involved in fishing, 60% (N=75) of processors and 58% (N=320) fish traders accepted that they did. The people who confirmed that they received the services were asked the frequency with which they received it and the responses were presented in Table 7.10 below. The table shows that for all three types of artisanal fishery operators, namely producers, processors and traders, “once a year” was the most recurring response. The message from these figures was that extension dissemination was a very rare event at the landing site. However, the table also shows that the next largest proportions of all the three types of operators reported “once a month”, which showed some level of activity at some of the landing sites.

Table 7.10: Frequency of Extension Services Received by Respondents (%):

	Once a week	Once a month	Once in three months	Once in six months	Once in six months	Once in one year	Total
Fishing	0.0	31.1	8.2	5.1	3.4	52.2	100
Fish Processing	2.7	41.3	5.3	1.3	1.3	48.0	100
Fish Trade	0.3	22.7	2.1	3.4	1.2	70.2	100

Source: Survey Data

When asked to rate the frequency with which they received the services using a one-to-ten point-scale, the majority (26.8%, N=238) scored 5 or were just satisfied and were the largest proportion. When asked to indicate up to two fields the extension covered most, the respondents perceived that fishing methods (46% N= 558 of responses) received the highest attention, followed by fish handling (40.7%) and fish processing received only 4.8% of the responses. However, asked to indicate their perception of extension need in the different areas, the fields were ranked closely, with business management ranking highest at 6.7 and fish processing least at 6.1. The data, therefore, showed that the extension services emphasised fishing methods while the need was greatest in fish business skills. The majority of the respondents (76.3% N=116) perceived some benefit to their operations from the extension services and the most highly rated benefit was in better storage of fish (7.1) while better fish catch and better prices both were given the lowest rating of 6.4. Respondents who reported that their activities did not benefit from the extension were asked why they did not and the most common explanation was that the message was not relevant (52.7% N=68), followed by the message not understood (22.5%).

The fisheries extension services in Uganda had moved through a number of phases. Initially it was a responsibility of the then Fisheries Department, now DFR. It was one of the duties carried out by the staff at the landing sites. Then in mid 1980s, a system of unified extension was introduced, under which the crop, livestock and fisheries extension activities were merged into one program, implemented by the same team of extension workers. This was because most households were engaged in most of these activities and needed to be given a comprehensive package of extension and not bits relating to each enterprise separately and unco-ordinated. Each member of the extension team would, therefore, have to master adequate knowledge in all the three disciplines to be able to impart the comprehensive extension package and this was not successfully accomplished. The National Fisheries Policy document noted: "The unified extension service did not realise the benefits that had been anticipated" (MAAIF 2000 p. 21). Finally, with introduction of the decentralisation policy, the Local Governments Act, 1997 provided for the extension role to be carried out by the districts and since then, it had moved from the Central to the Local Government.

A major project to strengthen agricultural extension in Uganda, the Agricultural Extension Project (AEP) was implemented between 1992 and 1998, with funding from the World Bank. The objectives of the project were to address the urgent needs for disease control and yield improvements and build capacity to deliver and support effective extension services. The project would provide assistance for strengthening of the delivery of extension services through the provision of transport, equipment, rehabilitation of facilities and incremental operating costs. Secondly, it would improve training capacity and skills through provision of equipment, supplies facilities and transport for regular in-service training of extension staff and periodic farmer-training at the District Farm Institutes (DFIs). Demonstrations at the DFIs and farmer-managed trials in their own fields would be conducted. The curriculum development and upgrading of staff capabilities at Bukalasa Agricultural College would be undertaken. Thirdly, the project would strengthen management systems in the Ministry of Agriculture, Animal Industry and Fisheries through training in management and team building. Consultancy services would improve financial management, procurement and budgetary procedures. The project would also provide operational support for monitoring and evaluation of extension activities and improved office facilities. Lastly it would conduct studies on the rationalisation of the training institutes and colleges of MAAIF and on the efficiency and impact of alternative technology transfer mechanisms (World Bank 2001a). However, capture fisheries was left out of this project but only aquaculture included. The designers of the project did not see the role of extension in capture fisheries, which was regarded as a hunting industry. At the close of the project, however, it was graded as an “unsuccessful” project, summed up as expensive and yet ineffective in the field. Its institutional structure was said to be top-heavy, bureaucratic, and unsustainable and the linkage between research and extension were not sufficiently responsive to farmers' needs.

Fisheries extension services in the past had been planned to cover equipment, methods and practices in fishing, handling and processing. Some of the limitations of the service were that the messages were unclear and often unattractive to the fishers, offering no rewards to the users. They were outdated, with no new information being fed in from research. Delivery of the messages was not carried

out under a well-planned program. Staff were not adequately skilled in message design and dissemination, in addition to being generally poorly equipped, facilitated and motivated in their work. As stated by PMA, “many extension workers are not competent, let alone being enterprising and innovative to meet the requirements of effective communication” (MAAIF and MFPED 2000 p. 54). There were no clear operational links between extension with research and the fishers to make the extension service a success. As a result, extension workers and researchers were not able to clearly understand the needs of the fishery operators and whatever research outputs generated could not be effectively disseminated. Perhaps the greatest limitation with extension in fisheries was that it was combined with law enforcement as part of fisheries management under one roof. The same fisheries staff at the landing site played both roles of providing extension services to the fishing communities and confiscating equipment, arresting and prosecuting their members whenever they broke fisheries laws and regulations. The two roles were found to be incompatible and it was usually the extension work that was affected as the officers were feared, mistrusted and avoided by the communities due to their law enforcement role.

The need for extension in fisheries would now be to establish a system that effectively delivered technology that would be cost effective and promote resource sustainability and fish quality. It remains to be seen if these requirements could be addressed in the new extension strategy proposed under PMA. The main features of the strategy is the shift from public to private delivery of extension, with predominant public funding while building foundation for greater private sector financing. Under the strategy, the National Agricultural Advisory Services (NAADS) project has been established under MAAIF, to be funded by the World Bank and other donors. The challenge is for fisheries communities to be adequately targeted under the provisions of NAADS as summarised below.

The goal of the National Agricultural Advisory Services Project was to assist poor farmers in Uganda in becoming aware and able to adopt improved technology and management practices in their farming enterprises, to enhance productivity, economic welfare and sustainability of farming operations (World Bank 2001a). There would be five components to the project. The first would be the Advisory and Information Services to Farmers Component, intended to

provide advisory services to farmers, including program orientation and group mobilisation for farmers' participatory planning, farm advisory services, information, communications and training. The component would provide matching grants to contract agricultural advisory services for the farmers. The Technology Development and Linkages with Markets Component would foster linkages among farmers, advisers and researchers in addition to links between farmers and markets. It would finance contract researchers to develop new technologies, adaptation and market information. The Quality Assurance-Regulations and Technical Auditing of Service Providers Component would develop a regulatory framework, by setting standards for qualification and performance, including technical auditing of service providers. The Private Sector Institutional Development Component would finance training to service providers and establish a program for assistance in private sector institutional development. Lastly the Program Management and Monitoring Component would undertake program management and monitoring, facilitating financing, auditing, reporting and maintaining the management information systems. Concerning the institutional and implementation arrangements, MAAIF would have overall national responsibility for the program, together with MFPED. There would be a NAADS Board and a Secretariat to handle aspects of policy and strategy and facilitate, supervise, and support implementation. In participating areas, District and Sub-county Local Councils and Administrations would be responsible for support and supervision at their levels. Primary responsibility at grassroots will be vested in the clients of the advisory services, namely the farmers themselves, through their elected Farmer Fora at Sub-county, District and National levels. The participation of fishing communities could be through the LMCs already in place at most landing sites. However, the lack of private sector extension service providers in fisheries will have to be resolved and in the meantime, Government would have to continue to provide the lead in fisheries extension services.

The thesis examined the role played by research in technology development for the poor. A successful technology development program would have a strong research component to address the fishery operators' desires for improved methods, inputs and information. There was considerable technology elsewhere

developed to improve aspects of fishing and fish processing, However, according to an author, "... most of these ... improvements cannot be effectively introduced without on-site research ..." (Herz 1996 p.). The role for research was recognised in the National Fisheries Policy as follows: "The Government will support the research-based and technology-based fisheries through effective and demand led research. Government recognised the fact that fisheries research is fundamental to decision making based on science and good practice in the sector. It will promote cost-effective research that responds to the needs of the fisher folk, private investors and communities, extension agents, Central and Local Government agencies. NARO through its affiliate institution FIRRI and Makerere University are currently undertaking fisheries research. However, all have inadequate resources and capacity. The Government shall strengthen and promote fisheries research as the basis for sustainable development and management of the sector. Traditional research areas will be expanded to include research that supports private sector development in both artisanal fisheries and aquaculture" (MAAIF 2000 p. 21).

The research examined the effect of research on the activities of the fishing communities. The objective was to assess the information of the fishery unit operators about the research services and how they benefited from them. Respondents were asked if they were familiar with the fisheries research activities being done. The responses are presented in Table 7.11.

Table 7.11: Respondents' Familiarity with Research Work in Fisheries:

Category	Research Familiarity					
	Yes			No		
	Number	Percentage	Number	Percentage	Number	Percentage
Fishers	126	18.4	560	81.6	686	100
Fish Processors	23	18.4	102	81.6	125	100
Fish Traders	69	12.5	483	87.5	552	100

Source: Survey Data

The table shows that most of the respondents (81.6% and above) felt that they were not familiar with the research work going on on the lake. This was an indication of how the research work was detached from the people it was meant to service in the fisheries. On the basis of this observation, it would be difficult to suggest that there was participation or even feedback from the poor into the research process. The respondents who confirmed knowledge about the research activities were asked what areas they thought the research covered and the responses were presented in Table 7.12.

Table 7.12: Perceived Areas of Research:

Areas of Research	Responses	
	No.	Percentage
Fish resources	144	68.9
Fish production	22	10.5
Fish processing	6	2.9
Fish marketing	28	13.4
Others	9	4.3
Total	209	100

Source: Survey Data

Table 7.12 shows that fisheries research was perceived by most respondents who knew about it to be addressing the resource base (68.9%). This observation agreed with the emphasis at FIRRI as well as at the Zoology Department of Makerere University on biological and stock research. The respondents also acknowledged some degree of research activities related to areas of production, namely fishing, processing and marketing, presumably based on the socio-economics surveys. Those respondents were further asked to assess their level of satisfaction with the research in the different areas mentioned. The ratings were close, with fish production ranked highest (6.3), followed by fish processing (6.2), resource base (6.0) and fish marketing (5.6). The data show that the

research needs of the respondents were highest in aspects related to fish production such as gear and methods. Respondents were asked if their work benefited from the research and 82.8% of them believed that it did not. For the few who benefited, they saw the benefit mostly in better product (mean score of 7.3). The respondents who did not benefit were asked why they did not and the main reasons reported were as presented in Table 7.13. Table 7.13 shows that “Research unknown” was the most frequently reported reason, followed by “Findings not understood.”

As a summary, the findings from the field survey indicated three limitations with the fisheries research. First, information about the research activities was not effectively communicated to the beneficiaries and as a result, the research remained largely unknown to them. Secondly, it did not address the needs as seen by the beneficiaries. The emphasis of research was on resource base, while the beneficiaries would have liked more work on production and processing technologies. Thirdly, research findings were not effectively disseminated to the beneficiaries, remaining largely not understood by them. From these conclusions, the recommendation is to improve communication between research and the fishing communities and establish greater involvement of them into the research processes.

Table 7.13: Reasons Why Research Did Not Benefit Work (%):

	Research unknown	Conditions for acquiring knowledge not available	Findings not understood	Lack of capital for its application	Others	Total
Fishing	92.5	1.7	4.4	0.0	1.4	100
Fish Processing	93.3	2.7	2.7	0.0	1.3	100
Fish Trade	97.9	1.1	0.5	0.5	0.0	100

Source: Survey Data

The Fisheries Resources Research Institute (FIRRI), one of the two public research institutions mentioned above, had the responsibility for development research. The Institute was one of eight institutes making up the National Agricultural Research Organisation (NARO). The mandate of NARO was to undertake, promote and co-ordinate research for crops, livestock, fish and forestry and ensure the dissemination and application of research results. NARO had just embarked on its second phase as a World Bank funded project, the Second Agricultural Research and Training Project (ARTP II). The objectives of ARTP II were to increase the efficiency and productivity of the dominant crop, livestock, fisheries, and forestry farming systems of Uganda; increase farm household income and improve family welfare and enhance the management of natural resources for the protection of the environment. There were three components to the project. The first was the technology development and adaptation component which would finance adaptive research and development activities to address specific production constraints and opportunities; identify new priorities to respond to serious emerging problems in subsequent annual assessment and establish an Agricultural Research and Development Fund to support a competitive research grants scheme. The outreach, extension, and technology dissemination component would give priority to the development and transfer of technology that addressed actual constraints of the dominant production systems of Uganda. It would also support demand-driven, client-oriented research and promote active participation of stakeholders in research planning, implementation, and beneficiary impact assessment. The institutional development component would support the transformation of National Agriculture Research Organisation into a research and development institution and strengthen its capacity to monitor, evaluate, and determine economic impact of improved technologies. However, NARO's effectiveness has often been limited by its approach. Despite its intention to work closely with clients to address their needs, it has often taken a top-down approach in deciding and implementing research programs and involved the clients at only a few stages of the research process.

The mission of FIRRI was to contribute to poverty eradication, food security and the conservation of the natural resource base by providing improved

technologies, methods and technical advice for increased and sustainable fish production and utilisation, a healthy and productive water environment and people-centred policies for sustainable fish production. The research mandate areas of FIRRI included capture fisheries, fisheries technology, fish production processes, aquatic environmental health, aquaculture and post-harvest processes. A program of socio-economic studies cuts across all these areas. Its objective was to generate data that would be used to formulate policies governing management and utilisation of Lake Victoria resources with greater community participation in formulation and implementation, so as to enable them maximise benefits from the fishery. Objectives of the capture fisheries research was to generate technologies, methods and advice for sustainable exploitation of fisheries; conservation of aquatic biodiversity; integration of lake productivity processes into fisheries management; prevention of pollution and degradation of the fish habitat and management and utilisation of fisheries with greater community participation. Among the other objectives was the enhancing of capacity to package and disseminate information. Information had been generated on the catching capacity and effects of the different types of gear. However, FIRRI had not been developing improved gears or fishing methods. The Food Science Research Institute (FOSRI) was working on aspects related to fish quality and fish preservation and had made recommendations for improved practices. However, no new equipment had been designed, tested and released to the fish processors. It was important for research to gear up to address the needs of technology among the poor as summarised in this chapter and to implement recommendations for relating more effectively with the poor as concluded from the survey findings earlier in this section.

7.5 Conclusion

The chapter was intended to contribute towards the research objective of identifying the causes of poverty among the fishing communities by analysing the technological factor as identified within the research model. It began by studying the characteristics of the technology used by the poor within the fish production and distribution systems with a view to identifying the constraints and strategies to address them. The research was, however, conscious of the conflict

between efficiency of technology and resource sustainability and the need to balance between the two objectives.

The characteristics of production technology were examined. In view of the resource constraints already caused by overfishing, improvement in technology efficiency could, at best only lead to temporary gains that could not be sustained. The options were in enhancing the stocks of the lake, getting some of the users to leave the fishery or extending to the offshore waters. Government policies towards resource enhancement and control of the number of users in the fisheries were noted. The options for the poor to exploit the offshore resources were examined, noting that the production technology was characterised by equipment that was unsuitable for extending to offshore grounds as a strategy for increasing production. The boats were examined and about 20.8% of them were of the 'parachute' type that could only be used within the inshore waters. In general, most boats (79.6%) were eight metres or less long and thus unsuitable for offshore operations. Furthermore, most of them were hand paddled, with only 13.1% motorised (LVEMP 2001). Most gill nets used (94.1%) were of less than 178 mm mesh size and thus unsuitable for offshore fishery.

Furthermore, any initiatives to expand into the offshore fisheries would involve changes in technology, skills, infrastructure development and market, which may be costly and out the reach of the poor. Other characteristics of the production technology used were that they were expensive to acquire and maintain and were also destructive to the fishery resource base. In an exercise to rate their perception of equipment used, the fishers expressed satisfaction with selectivity, size and efficiency of gear but were dissatisfied with cost and maintenance. A similar exercise was done with respect to boat and engine. Fishing without the use of boats was regarded as a health risk, in view of the prevalence of bilharzia on the lake.

The situation of the technology in fish post-harvest fisheries was examined. The areas of concern included handling, processing, transportation, marketing and their effects on fish quality and post-harvest losses. These losses were estimated at 20% of the value of catch (Masette 2000). Delays in landing the catch and processing it once prepared were some of the responsible practices. The presence of mud, rotting weed, animal and human wastes at the landing site as well as

poor transportation hastened spoilage. The different types of processing were reviewed, namely sun-drying, salting and smoking and weaknesses in these practices identified. Sun-drying was applied to small sized fish, namely *R. argentea* and the haplochromines as well as to the big fish including the tilapines and *L. niloticus*. The fish were often spread out on rocky or sandy surfaces while drying. Disadvantages of drying on the ground included the fish becoming dirty with dust and sand; animals such as chickens, dogs and rats having free access to them; the conditions being generally very unhygienic and the rate of drying slow. In salting, the practice of sprinkling the fish with salt then spreading on bare ground for drying for three to five days was reported. However, because it did not absorb sufficient salt, the product could not keep long. The recommendations to improve these processes included the use of drying racks to spread the fish and brining prior to sun-drying for the bigger fish.

Smoking was the most commonly used drying method and was applied to most species except the small-sized fish. It was practised at many landing sites because of their inaccessibility to markets of fresh fish (Reynolds and Ssali 1991). Most operators used traditional smoking kilns, while a few had made some improvements to it, mainly by elevating it above the surface of the ground. The disadvantages of the traditional processing kilns included inefficient use of fuel, non-uniformity in the smoked product; low capacity and the need for constant attention to keep the fire burning and control the smoking process (Bostock 1987). Recommendations to improve smoking include brining the fish prior to smoking; drip-drying to eliminate excess surface water; use of several trays to save energy and fitting of a smoke spreader to allow uniform distribution of the smoke within the fish (Masette 2000). Frying was also applied, with respect to small portions of *L. niloticus* or its juveniles. This was mainly to serve the direct consumers in urban areas.

At the marketing stage, quality concerns were with the transportation vehicles which carried a variety of other goods, creating a danger of contamination as well as of fragmentation due to the pressure on the fish. At the market, fish stalls were often located near an open sewer, waste disposal bin, charcoal stalls and lavatories, all of which were potential sources of contaminants. Furthermore, the display tables, the chopping and scaling knives and gunny bags for covering fish

were not kept sufficiently clean because most fish stalls had no cleanable or disinfectable facilities or access to potable water.

Generally, therefore, the technology in artisanal processing and marketing could not ensure fish quality and minimise product losses. Continuous exposure to smoke was also regarded as a health hazard for the operators. Inadequate know-how and poor practices among the operators, limited resources at their disposal and lack of infrastructure and facilities were the causes of these limitations.

In order to provide an understanding of how technological limitations might be addressed, the research examined the training, extension and research services available to the poor. It was noted that apart from the low levels of formal education received by the fishery operators, there was also little 'fisheries education' content in it. Training in fisheries was mainly provided by the Fisheries Training Institute, formerly under the Fisheries Department but recently transferred to the Ministry of Education and Sports. The course content included elementary stages of fishing gears and methods, fish handling, processing, post-harvest losses, fish quality and preservation methods. A major limitation of the technology training was that it did not prepare trainees for private sector participation in the fishing industry, but rather as 'job seekers.' Makerere University, through the Zoology Department, was offering a Master of Science course in fisheries and aquatic sciences. The National Fisheries Policy pledged to develop capacity at national, district and private sector levels to improve skills in the fisheries sector. However, it was noted that there was lack of properly organised fisherfolk leadership to implement community-based training programs.

The role of extension in technological development was reviewed. Data from the research revealed that extension activities were not frequent at most landing sites. The available extension was said to cover fishing methods and fish handling. The needs of the respondents were, however, highest in 'business management.' Benefits received from the extension related to how to maintain the quality of fish. Uganda's fisheries extension service had moved through a number of phases, from the Fisheries Department, to the Unified Extension System which merged crop, livestock and fisheries extension activities and recently to the districts under the Local Governments Act, 1997. Throughout its history, the main problem was the combination of fishers extension with enforcement of regulations, both carried out

by the same staff. Government's plans for extension were in the establishment of the National Agricultural Advisory Services (NAADS) Project, aimed at assisting poor farmers in Uganda to become aware and able to adopt improved technology and management practices to enhance productivity, economic welfare and sustainability of farming operations (World Bank 2001a).

The study examined the effect of research on technological development. This was because a successful technology development program needed an effective research component to address the fishery operators' desires for improved methods, inputs and information. The data showed that most of the respondents (81.6%) were not familiar with the on-going research on the lake. The few who were familiar perceived the research work to be mainly on resource base, followed by fish production. The preferences of the respondents, however, were highest for research on production, followed by resource base and marketing. Many people also felt that they did not benefit from research because it was unknown to them. Fisheries research was the responsibility of the Fisheries Resources Research Institute (FIRRI). The role of FIRRI was to provide improved technologies, methods and technical advice for increased and sustainable fish production and utilisation, a healthy and productive water environment and people-centred policies for sustainable fish production. The Institute had a broad structure to address the different dimensions of research, required of a poverty approach. It also maintained a wide network of collaborators of technical and financial nature. However, FIRRI's slow response to the concerns of the poor had been attributed to its inability to adopt bottom up approaches within her programmes.

The thesis has, therefore, been able to identify the technological constraints as well as the limitations within the training, extension and research services and how to address them. However, the success of technological development assumes that effective fisheries management would also be put in place.

CHAPTER EIGHT

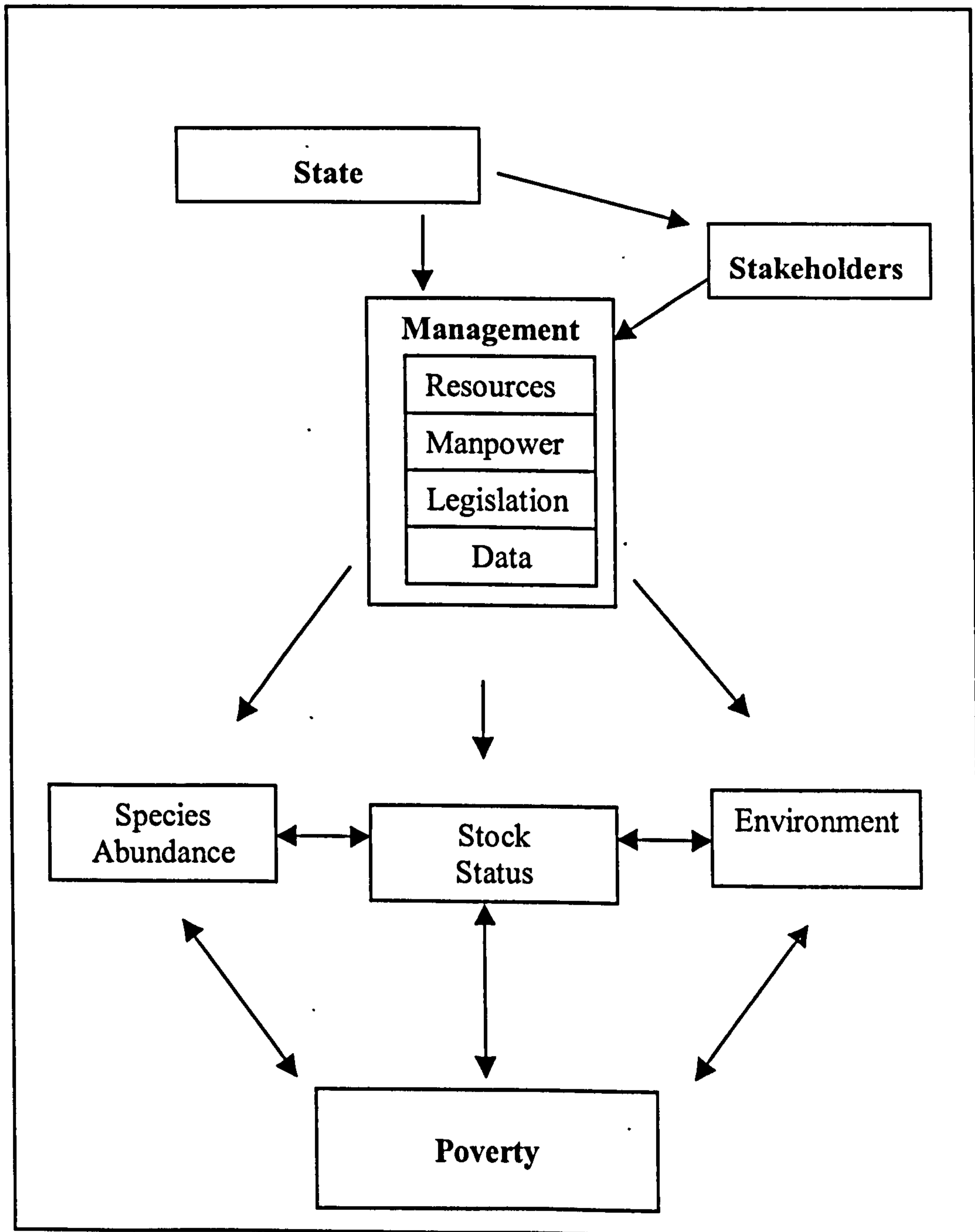
EFFECTS OF DEGRADATION OF THE FISHERIES RESOURCE BASE

8.1 Introduction

The research examined fisheries resource availability as one of the factors contributing to poverty among the fishing communities, as postulated in the model. The literature review in Chapter Three had provided a theoretical analysis of the relationships between natural resources and poverty and issues of natural resource management in general. The research model was a step forward because it provided an analytical framework for relating poverty to the natural resource base in the specific situation of the fisheries on Lake Victoria. Its prediction was that degradation of the fisheries resources would drive the system into poverty. The purpose of this chapter is to elaborate this relationship with observations in the fisheries. It is intended to report the findings on the fisheries resource availability and show its effects on poverty among the different sections of the fishing communities. The findings of the chapter contribute towards answering one of the research questions for this thesis and its related objective, namely what were the factors causing the poverty situation within the groups and regions. The relevant hypothesis that had been put forward was that unsustainable utilisation of the fisheries resources contributed to the poverty within the groups and regions. Recommendations from the chapter would guide fisheries management in achieving the poverty alleviation objective of development. The chapter begins by identifying and describing the aspects of fisheries resource degradation relevant to the issue of poverty. Existing evidence of the degradation is reviewed and the main causes examined. The effects of resource degradation on poverty are then analysed, identifying which dimensions of poverty are most affected. Measures to address resource degradation are reviewed in the context of the fisheries policies in place. The different elements of fisheries management are examined, namely the legal framework, implementation and the role of the stakeholders, with a view to identifying the constraints. Policies, institutions and project initiatives in place to strengthen fisheries management are presented. The chapter concludes with a discussion of

how the needs of poverty alleviation need to be incorporated in the on-going efforts to strengthen fisheries management on Lake Victoria.

Figure 8.1: Factors and Influences in the Resource – Poverty Relationships on Lake Victoria:



The framework to aid the analysis is presented in Figure 8.1, which depicts the main factors and influences within the fisheries resource and poverty

relationships on Lake Victoria. The figure indicates that a two-way relationship exists between poverty and fisheries resource degradation, manifested in the different forms, driven by different human as well as natural factors. Fisheries management was an important influence in regulating the driving forces to ensure sustainability in the fisheries resource base. The figure depicts the important role of management not only for resource sustainability but also in ensuring sources of livelihood and preventing general deterioration of the fisheries environment, which could affect other dimensions of poverty. The state and the stakeholders, through their relevant institutions, could determine the success of fisheries management by supporting the various elements and functions.

8.2 Characteristics of Fisheries Resource Degradation

A fishery was said to be degraded if any or all of the indicators began to show, namely decline in catches from the fishery, higher proportion of immature fish in the catch and reduction in the species composition of the catch. Deterioration of the water environment was equally undesirable as it could have direct as well as indirect effects on the life of fishing communities. During the study, evidence of resource degradation was examined, based on the above criteria. Concerns over the status of the fisheries resource base had been raised for some time. A case in point was the statement by the National Fisheries Policy which read as follows: "The key issues in the fisheries sector are: i) Resource depletion through overfishing aggravated by use of destructive fishing gear and methods" (MAAIF 2000 p. 6). An indicator of the resource depletion would be provided by the catch statistics, where declining annual catch would reflect, among other causes, resource depletion. In addition, the size structure of the catch, indicating the proportions of immature fish would be another indicator of resource degradation. The research, therefore, examined catch statistics for the purpose of identifying indications of resource decline. A brief background to these statistics would be necessary to understand their availability. The responsibility for Uganda's fisheries statistics lay with DFR, operating through the districts as part of the decentralisation arrangements. However, for several years, Uganda had been unable to produce comprehensive fisheries statistics due to a number of

constraints. These included lack of a mechanism under which the Local and Central Governments would co-ordinate statistics activities. The point was illustrated by this quotation from a DFR report: "Fisheries Department for a long time has been compiling fish production and marketing data from monthly and annual reports submitted from districts. From time to time, periodic surveys were also done by Fisheries Department headquarters' staff to carry out on-spot ground-truthing. Following decentralization and departmental budgetary squeeze, data collection mechanism has become less effective. In 1999 out of 45 districts only about 20 districts reported on fisheries activities. Even those 20, which reported, either reported on less than 6 months or the report content was more qualitative than quantitative. Efforts by the Department to remind the district fisheries staff of the monthly reports elicited low response because the district fisheries staff complained either of under-facilitation or under-funding. Under such circumstances, reliable data on: fish production, catch-effort, socio-economics and other relevant fisheries information became difficult to compile" (DFR 1999 p.9).

The under-staffing and under-funding constraints also applied at the Central Government level. Essential equipment including vehicles and computers were inadequate and often non-operational. The personnel lacked training. Efforts were made to rehabilitate the statistics system under the FAO/UNDP Fisheries Statistics and Information Systems Project, 1988-1991. The project provided the essential equipment for statistical work, training in statistics and socio-economics to staff, designed a system for data collection, carried out socio-economics surveys and a frame survey in 1990 (Coenen and Tumwebaze 1991). However, the system established could not be sustained beyond the end of the project due to insufficient understanding by the staff, insufficient resources and facilities and inadequate manpower, among other constraints. In the recent years, however, Government had been planning to establish an effective system for acquisition and dissemination of reliable data for fisheries management at sub-county, district and national level. This would also involve designing of a suitable sampling plan and estimation procedure for fish catch assessment. A frame survey was also conducted in 2000 to collect data on fishing effort and spatial distribution of fishing factors. A review of the available catch statistics showed

indications of resource decline as shown by the sharp fall in annual fish catch from 134,900 tonnes in 1993 to 103,000 tonnes in 1994 and failure to recover in the subsequent years until 1999, when it rose to 111,400 tonnes, as shown in Table 5.22. The stagnant catch level between 1994 and 1998 was viewed against a rapidly increasing population with an annual growth rate of 2.5% per annum (UBOS 2000b). This meant that the catch per head was declining and this would affect the well being of the fishing communities.

As part of the research, respondents involved in fish production were asked to name what they considered their first and second most limiting factors to their activities. A Multiple Response frequency analysis was carried out on the responses and the results were as presented in Table 8.1.

Table 8.1: Multiple Response Frequencies of the Limiting Factors to Fishery Activities:

Limiting Factors	Percentage of Responses (N=672)
Regulations	9.2
Fish Scarcity	29.3
Boat Limitation	12.5
Gear Limitation	32.4
Other Fishers	4.9
Market Limitation	4.9
Others	6.8
Total	100

Source: Survey Data

Fish scarcity was identified by 29.3% of fishing respondents as their most limiting factor, second only to gear limitation (32.5%). There was also a temporal dimension to the problem of fish scarcity. As noted in Chapter Five, the research revealed a pattern of seasonal variation in fish catch as perceived by the communities, as depicted in Figure 5.2 above. A clear pattern of high and low

fish catches was demonstrated. Other studies had also identified the problem of fish scarcity among fishing communities (MFPED 2000d, SEDAWOG 2000b) as reported in paragraph 5.5 above.

The research examined the available scientific evidence of the resource decline on Lake Victoria. At the time of the research, activities to generate current information on stocks of fish that were exploitable and marketable from Lake Victoria were still underway on the LVFRP. However, a recent statement from the project put the provisional estimate of *L. niloticus* stocks lake-wide at about 650,000 tonnes, based on acoustic surveys, an amount that had not changed much over the last two years. Meanwhile, the combined estimate for the haplochromines and *R. argentea* was put at 750,000 tonnes (LVFRP 2001 p. 2). Data from (Okaronon 1998) were generated from experimental bottom trawling surveys in Uganda region between 1993 to 1997, intended to provide information to guide management of the fishery. The exercise involved estimating the composition, abundance, population structure, distribution and biomass of the major fish species at the time. It consisted of 1-hour hauls using the research vessel MV IBIS in 4-50m transects using 25.4 mm codend mesh trawl nets. The results were then compared to those from the 1967/71 surveys (Kudhongania and Cordone 1974). Some of the findings were presented in Table 8.2. The table showed that for trawls within the 4-29 metre depth range, the mean catch rate (kilograms per hour) fell significantly between the 1976/71 and 1993/97 surveys. It also showed that the estimated average standing stock in kilograms per hectare reduced between the two surveys.

Table 8.2: Catch Rate and Standing Stock Comparisons between the 1967/71 and 1993/97 Surveys:

	1969/71 Survey	1993/97 Survey
Mean catch rates	797 kg/hr	150kg/hr
Standing stocks	80 kg/ha	39 kg/ha

Source: Data from (Okaronon 1998 p. 30)

The recent history of fisheries resource decline on Lake Victoria began in the first half of the 20th century, when the catch from some of the main indigenous commercial species on the lake began to fall (Dobbs 1928, Graham 1929). This was attributed to overfishing that had resulted from the growth in population, as well as the advances in fishing methods (Chege 1995). In response to the problem, Graham (1929) put forward a number of recommendations, notably the restrictions on the use of gill nets of less than 5-inch mesh size and on use of active fishing methods. Despite that, by the 1950s, popular species, particularly the *Oreochromis esculentus*, had diminished so severely that they had become commercially extinct. To remedy the situation, the Government undertook the introduction of new fish species on the lake, namely the *O. niloticus* and the *L. niloticus*. This was to become a major event in the history of Lake Victoria fisheries, due to the developments that followed. The arguments behind the introduction of the *L. niloticus* were discussed by Anderson (1961), indicating that it was based on the knowledge that the commercial fishery on Lake Victoria would be improved by the introduction of a suitable predatory fish which in itself was acceptable as a food fish. An analysis of the data which already existed concerning the *L. niloticus* on Lake Albert, Lake Tanganyika and Lake Rudolf indicated that introduction of the fish might bring about the desired improvements in three ways. First it would increase the value from the fisheries by converting the vast haplochromine populations into more valuable fish. The haplochromines had remained virtually unutilised and the earlier ideas to set up a trawl industry based on it to produce fishmeal was discouraged by the drop in price of fishmeal on the international market due to increased catches from the sea fisheries. The haplochromines were, therefore, considered 'trash fish' which needed to be replaced. Experiences from the other lakes, however, had shown that the *L. niloticus* was held in high esteem and fetched high prices in its fresh and processed forms and was, therefore, a desirable food fish of high economic value most suitable to replace the haplochromines. Secondly, introduction of the *L. niloticus* would permit an extension of the present fishing grounds, to minimise the overcrowding in the inshore areas. This was because of its ability to live in the deeper offshore waters, thus permitting a dispersal of the fishing effort. Thirdly, it would allow the use of a wider variety of fishing methods. This was possible because of its great size range, which allowed it to be caught in

a variety of gear. Its presence would bring about extension to include the use of 8 and 9 inch gill nets, long lines and possibly troll line fishery. This would reduce the pressure on *O. niloticus*. The available data concerning *L. niloticus* in those areas where it was endemic were supplemented by 'pilot introductions' into other waters to provide information unobtainable by any other means (Anderson 1961 p. 201). The pilot introductions were carried out on Lake Nabugabo, a satellite of Lake Victoria in Masaka District, in two batches totalling 115 fish between 1959 and 1960 and on Lake Kyoga in 8 stockings totalling 556 fish at various locations between 1954 and 1960. The idea that *L. niloticus* be introduced into Lake Victoria was not a sudden one, as it had been considered way back by Graham (1929), by Worthington (1932) and later by Beverton (1959). The Uganda Game and Fisheries Department carried out the stocking while the East African Fisheries Research Organisation was charged with the responsibility of monitoring and assessing the impact of the introductions on the fisheries. Criticisms had also been raised that the proposals were based on ignorance of several fundamental biological concepts and that the introductions would jeopardise the existing commercial fishery on Lake Victoria, particularly the tilapine fishery (Fryer 1960).

Other scientific studies revealed the unsustainable status of some of major commercial species contributing to the total yields. Ogutu-Ohwayo (1998) examined the sustainability of the *L. niloticus* fishery, based on a study of the changes in total fishery yields and life history characteristics of the *L. niloticus* itself and its predators since the predator got established in Lakes Kyoga and Victoria. The paper noted the rise in total yield on Lake Kyoga from 18,000 tonnes in 1964 to 167,000 tonnes in 1978, attributed to the rise in contribution of the *L. niloticus*, from 7,000 tonnes to 71,000 tonnes in the same period. However, after that the *L. niloticus* yield declined to 15,000 tonnes by 1989. That suggested that the *L. niloticus* might not sustain the high yields realised soon after its establishment. The paper attributed the decline to heavy fishing pressure, use of destructive fishing methods and reduction in the food supply. Relating to the situation on Lake Victoria, the paper concluded: "The decline in *L. niloticus* yield on Lake Kyoga, the reduction in the prey supply in the new habitats, the decrease in average weight of the *L. niloticus* and the male biased

population suggested that *L. niloticus* may not sustain the very high yields realised soon after its establishment in Lakes Victoria and Kyoga. This situation is compounded by the very high fishing pressure on the species due to the very high demand for fish by the increasing human population and the export oriented fish processing” (Ogutu-Ohwayo 1998 p. 32).

The evidence from the study, therefore, suggested that the *L. niloticus* resource would be on the decline. Another important commercial species whose fishery was evaluated was *R. argentea*. Wandera (1998) examined the reproduction, growth and harvesting of *R. argentea*, the second most important species to *L. niloticus* on Lake Victoria. The fish was reported to breed throughout the year but with breeding peaks in the months of August to September and December to January and the offspring matured after 10 months with an average standard length of 43 mm. Four different fishing methods for it were described, namely by use of beach seine, lampara boat seine, scoop net and lift net, all involving the use of lighted kerosene pressure lamps to attract the fish. The fishing operations were concentrated in shallow inshore areas and near the islands, while the vast open waters of Lake Victoria remained unexploited due to the small size of boats used that could not withstand the rough waters of the open lake. Another possible threat, a tapeworm usually known to be parasite to the fish, *Ligula intestinalis*, only occurred in less than 1% of the fish on Lake Victoria and was, thus not a big threat. According to the paper, *R. argentea* was resilient to predation by the *L. niloticus* that was partly responsible for the disappearance of many native species from Lake Victoria. Therefore, its fishery had potential for future development and exploitation, particularly since only a small area of the lake was under exploitation. The potential for expansion only required investments in larger and safer boats capable of operating offshore, for it to be realised. However, despite the seemingly happy situation, the paper concluded with the statement: “The combined effect of predation and human exploitation can deplete *R. argentea* stocks if the fishery is not properly managed (Wandera 1998 p. 34). Therefore, given the rather limited success in fisheries management on the lake, it could be said that one of the conditions provided by Wandera (1998) did not hold and *R. argentea* could also be considered a resource under threat.

Turning to information as to which species were formerly abundant but had disappeared, Okaronon (1998) provided comparisons of the major species changes in the biomass of the lake over the period between the 1967/71 survey and that of 1993/97. The species most affected, as presented in Table 8.3 below, included *Haplochromis spp.*, *Bagrus docmac*, *Clarias spp.*, *Oreochromis esculentus* and *Protopterus aethiopicus*. The trawl results did not show *R. argentea* possibly because of the 25.4 mm codend mesh size of the trawl nets used, which was too large to catch the species.

Table 8.3: Comparisons of Species Abundance between 1967/71 and 1993/97 Trawl Surveys (%):

	1969/71 Survey	1993/97 Survey
<i>L. niloticus</i>	<0.1	96.8
<i>O. niloticus</i>	0.5	2.8
<i>P. aethiopicus</i>	2.8	0.1
<i>S. afrofisheri</i>	NA	0.1
<i>Haplochromis spp.</i>	83	0.2
<i>B. docmac</i>	4.2	0.0
<i>Clarias spp</i>	4.1	0.0
<i>O. esculentus</i>	3.8	N/A
<i>S. victoriae</i>	0.4	0.0
Total	100	100

Source: Data from (Okaronon 1998 p. 30)

The disappearance of these species from the commercial catches had become a known feature of the fisheries. FAO (1999) reported that in the 1980s, *L. niloticus* showed dramatic rise in both absolute and relative quantities, accounting for upwards of 60% of the total 500,000 tonne annual catch from the lake by late 1980s. The same period was marked by a fall in haplochromine catches to only negligible levels. It was also marked by varying degrees of decline in the catches of other common target species, with the notable exception

of *R. argentea* and the exotic *O. niloticus*. “From the harvest point of view, therefore, the fisheries lake-wide had by 1990 been transformed from a complex multi-species array to a much-simplified one, based on two exotic and one endemic species” (FAO 1999 p. 3). The information, therefore, shows that once there were several species of commercial importance on Lake Victoria but they had lost their significance, attributed to the different factors as discussed in paragraph 8.3 below. Namulemo (1998) provided an inventory of the endangered species that still survived in Lakes Victoria, Kyoga and Nabugabo, threats to their survival and the possible conservation strategies for them. In her findings, the author said: “Some of the satellite lakes, as well as structural and physiological refugia within the main lakes harboured some of the endemic species and trophic groups that have either disappeared or are at the risk of extinction from the lakes” (Namulemo 1998 p. 35). She named the species found to be still surviving in localised habitats, of which the following had been commercially important on the lakes: *Bagrus docmac*, *Protopterus aethiopicus*, *Clarias gariepinus*, *Synodontis afrofisheri*, *Mormyrus kannume*, *Labeo victorianus*, *Barbus altianalis* and *Schilbe intermedius*. Apart from overfishing and predation, other threats identified in the study included habitat destruction, blockade of passage for fish that spawned upstream and pollution, which resulted in depletion of dissolved oxygen and led to fish kills. The recommendations of the study for conserving and restoring some of the endangered species included: i) avoid clearing aquatic vegetation that served as cover from predation; ii) avoid destroying or even fishing in rocky outcrops; iii) raise some species through fish farming and stock them in dams; iv) designate some of the small lakes that still contained some of the endangered species into conservation areas; and encourage ornamental fish traders to breed their fish in captivity and only collect broodstock from the wild.

Turning to the proportion of immature fish in the commercial catch as an indicator of resource degradation, this could not be discerned from the catch statistics as the data did not reveal the size structure of the catches. However, some indications were obtained from Muhoozi (1998), who examined, among other objectives, the relationship between boat size and the quantity and species composition of the fish catch. One of his important findings was that 73.6 to

89.0% of *L. niloticus* caught by boats of less than 8 metres length were equal to or less than 50 cm length. Given that in fisheries management, the size limit of fish that should be harvested was set at first maturity, that is, the size at which 50 per cent of the members of that species were mature (Beverton and Holt 1957) and since the size at first maturity for *L. niloticus* in Lake Victoria was 50-55 cm for males and 80-100 cm for females (Ogutu-Ohwayo 1988, 1994), this implied that these boats were mainly landing immature *L. niloticus*. According to the data from the frame survey of 2000, these boats made up about 80.0% of the fishing crafts on Lake Victoria, Uganda (LVEMP 2001). This information showed that there was large proportion of immature *L. niloticus* in the catch. This view was supported by the large quantities of immature fish seen at most of the landing sites and market centres during the survey.

8.3 Causes of Resource Degradation

The next step in the research was to obtain information on the causes of resource degradation in fisheries. Some of the factors had already been introduced in paragraph 5.5 above. Among these was that of overfishing. This was said to occur with the application of effort that harvested more than the maximum sustainable yield (MSY) of the fishery. MSY is calculated by matching fishing effort to catch output for the fishery over a period, thus it requires reliable time series data on the different variables. Difficulties of estimating MSY for Lake Victoria have arisen from lack of such data. Measures of catch per unit effort (CPUE) for the different gear types and fishing methods were important in estimating fishing pressure and fisheries management regulations were often based on them (Kamanyi *et al.* 1998). Similarly, these measures were not readily available. Therefore, although inshore fishing grounds were said to be overfished, there was lack of data to quantify the problem. Overfishing was largely a consequence of affluence, as fishers sought to catch much more than their needs. The feeling was also expressed by an author who stated: "Excessive greed for money and the fulfilment of dietary demands are a riddle to the fisheries industry!" (Kiiza 1998 p. 55). Throughout the research, reference was made by fishers about the "greed" in their fellows as a major source of management problems in the fisheries. These included overfishing and use of

destructive gear and fishing methods. The affluence was also exhibited by industrial processors, who tried to process more than their quota allocations of the catch, as a desire to maximise profit. Lastly, the foreign consumers, whose affluence, drawn from their desire for high quality white fish, led to excessive demand and drove the whole system towards unsustainability. Another cause of overfishing was the population factor. High growth rates, estimated at about 2.5% per annum for the lake region, fuelled entry into the fishery. Available data indicated that the number of boats on Lake Victoria Uganda had risen significantly since the early 1970s, as shown in Table 8.4.

Table 8.4: Number of Fishing Boats on Lake Victoria, Uganda:

Year	Number of Boats
1972	3,200
1988	3,470
1990	8,000
2000	15,544

Sources:(LVEMP 2001 p. 9, Okaronon 1998 p. 29)

There were insufficient data to do similar comparison for gear and labourers but these could be assumed to have increased in similar proportions as the boats. Overfishing was also attributed to lack of alternative income activities for the growing population. Limited access to land, lack of farming inputs, unpredictable weather patterns and lack of market were among the factors identified under PMA as the major constraints in agricultural production, the main alternative to fishing (MAAIF and MFPED 2000 p. 12). The next cause of fisheries degradation, the catching of immature fish, was a technological decision driven by market and economic factors. In Chapter Two, it was reported that the demand for *L. niloticus* by processing companies had driven up ex-vessel prices and diverted product away from the domestic consumers, the consequences of which included increased harvesting and trading of undersized fish on the

domestic market (FAO 1999 p. 5). This was re-affirmed by a DFR official in the statement: “Rampant immature fish exploitation and insatiable consumption of immature fish manifest the desperate human socio-economic budgetary deficits. As the majority of households are poor, it is obvious the lake becomes victim of circumstances” (Kiiza 1998 p. 56). Poverty, through the low purchasing power within the consumers, created demand and stimulated the catching of immature fish. Furthermore, the producers themselves who, unable to afford the cost of appropriate fishing equipment, resorted to the use of cheap but destructive fishing gear. The combination of demand and cost factors that threatened the resource would drive the system into further poverty, as depicted in the Lélé model.

In paragraph 5.5, the other important human activities discussed that affected the fisheries resources included release of nutrients from the soil, that ended up in the lake; discharge of human and animal wastes and pollution from industrial processes without adequate provisions for waste disposal. A number of other causes were explained, including the introduction into the lake of a major predator, the *L. niloticus*, the entry of the water hyacinth as well as climatic changes which affected the health of the lake. Eutrophication, an aquatic degradation factor, was also said to affect resource availability. Bugenyi and Balirwa (1998) defined eutrophication as “a process whereby water bodies become progressively enriched with nutrients (mainly nitrogen and phosphorus), with a resulting excess production of plant (usually algae) biomass. Ecological functioning and floral and faunal balances became grossly disturbed” (Bugenyi and Balirwa 1998 p. 6). On Lake Victoria, Hecky (1993) reported that increased concentrations of phosphorus had occurred over the previous three decades, believed to contribute to the growth of plants. This was said to have stimulated the growth of algae, with the rate of production more than doubling while the quantity in the lake increased 8 to 10 times (Mugidde 1993). The type of algae produced in the lake had changed from diatoms to bloom-forming and potentially toxic blue green algae. Much of the algae was not consumed and as it decayed, it depleted the water column of oxygen. This had reduced the volume of habitable space for both the *L. niloticus* and its prey (EPRC 1999 p. 55).

Wetland degradation, attributed to growing population and increasing pressure over land, was also said to contribute to fish scarcity. Bugenyi and Balirwa (1998) highlighted the importance of shoreline wetlands that formed extensive buffer zones around Lake Victoria. The abundant papyrus within the wetlands were also important for the fisheries as refugia into which the prey fish could escape from the predator, the *L. niloticus*. Furthermore, by reducing the exposure to direct sunlight, they had the effect of reducing mixing in the water below and minimising the occurrence of oxygen depletion in the swamp water. Despite their importance, however, the authors concluded that the wetlands of Lake Victoria had not attracted sufficient interest, lacked comprehensive management guidelines and had been little studied (Bugenyi and Balirwa 1998 p. 5). National Wetlands Programme, under the Ministry of Water, Lands and Environment, had been responsible for wetland management in the country. The programme was designed to assist the Ugandan Government to develop a National Policy for the Conservation and Management of Wetlands and to acquire the technical capacity necessary to implement this (Mafabi and Taylor 1993). It had seven major objectives, namely i) to determine the location, biotic and physical characteristics of the major wetland systems; ii) to identify the values and services provided by wetlands, as well as current uses and the potential for further utilisation; iii) to identify and quantify current and potential threats to wetlands; iv) to effect a detailed review of previous wetland development activities, identifying the short- and long-term costs and benefits of wetland loss; v) to provide the technical capacity necessary to carry out environmental impact assessments (EIA) of proposed wetland development activities; vi) on the basis of the information collected in pursuit of the above objectives, to draw up a national policy for the conservation and sustainable utilisation of wetlands; vii) build governmental and public awareness of the importance of wetlands and of the economic and social benefits which can accrue from environmentally sound management of wetlands. The wetland policy and legislation were considered the most important products of Uganda's Wetlands Programme. The main goal of the wetland policy was to promote the conservation and management of Uganda's wetlands in order to sustain their ecological and socio-economic functions for the present and future well-being of the people. The National Wetlands Policy elucidated the wetland resource

problems; set goals for achieving sustainable development and optimum utilisation of wetlands; outlined the principles on which the policy goals could be achieved and elaborated specifically targeted policy proposals. In particular, the policy aimed at ensuring no drainage occurred unless more important environment management requirements superseded; only non-destructive uses were carried out in and around wetlands; wetland developments were subject to environmental impact assessment and audit; an optimum diversity of uses and users was maintained and consideration for other stakeholders given when using a wetland.

This thesis has focussed specifically on the Lake Victoria shoreline wetlands, which were of direct relevance to the fisheries resources and found indications that these were also under threat. A recent study examined the main activities of fishing communities that utilised resources from the shoreline wetlands (LVEMP 2000b). The study revealed that considerable resources from the wetlands were used in fishery activities. Papyrus was a wetland material used for constructing houses, making floats and fish baskets at most landing sites, followed by *Phragmites*. Clay from the wetlands was used for smearing the floor and walls of the huts. Various plants were used for fish smoking as well as for spreading, covering and packaging fish. Shrubs and *Phragmites* were used for cooking. Some fishing was also done in the wetlands, with *O. niloticus* as the most common species landed, followed by *Protopterus spp.* However, despite all these uses, fishers did not perceive of fishery activities as being significant in reducing wetland materials. Shoreline wetlands were said to be primarily under threat from cultivation and fires from hunters. On strategies to manage the wetland resources, the fishers advocated for full involvement of the community for greater success. To understand how a community-based wetland management would operate, the research reviewed the experiences of the Jinja Urban Wetland Women Association, a product of collaboration between Jinja Municipal Council, University of Zurich and FIRRI (Wacker *et. al* 1999). The collaboration was aimed at achieving sustainable utilisation of resources from the main wetlands within Jinja Municipality. The main outcome of the collaboration was the passing of the Jinja (Wetland Resource Management) Bye-laws, 2000 (Government of Uganda 2000).

The objectives of the bye-laws were to facilitate the sustainable use of wetland resources by and for the benefit of the people and communities using the wetlands of Jinja Municipal Council; to permit the sustainable use of the natural resources of the wetlands in a manner which was compatible with the continued presence of these wetlands and to end unsustainable uses of wetlands so that the functions and values derived from wetlands could be maintained for the present and future generations. The activities in the wetlands which were prohibited were listed in Article 5. They included to reclaim or drain a wetland; to erect construct, place, alter, extend, remove or demolish any structure that is fixed in, or over any wetland; to disturb any wetland by drilling or tunnelling in a manner that was likely to have an adverse effect on a wetland; to pollute or deposit in any wetland any substance; to cultivate a wetland or an area within a wetland other than in the manner specified in these bye-laws or any other law; to destroy any wetland in a manner that had or was likely to have an adverse effect on any plant or animal or its habitat; to remove soil from a wetland for the purpose of making bricks; to introduce or plant any exotic or introduced plant or animal in a wetland. Article 6, on the other hand, provided for activities permitted in the wetlands. They included harvesting of papyrus, trees, reeds and medicinal plants; fishing using traps, spears, hooks or baskets; collection of water for domestic use; grazing of livestock; hunting and any other activities which had been expressly permitted and sanctioned by the Wetland Custodian or the Environment Committee. The Bye-laws provided a legal framework as well as a machinery for managing the wetlands in the municipality.

Other activities detrimental to the resource identified included threats to refugia and similar habitats. In Lake Victoria the rock-dwelling fish species were said to have been least affected by *L. niloticus* predation probably because they were able to take refuge among the rocks. (Ogutu-Ohwayo 1990). Papyrus swamps and other fringing macrophytes also acted as barriers to the spread of *L. niloticus* as the species could not survive under low oxygen levels. There were also satellite lakes in the Lake Victoria basin, which had fish species that were previously present in the main lakes. The satellite lakes, therefore, together with marginal macrophytes and rocky out-crops were important in conservation of fish species diversity and needed to be protected. However, during the research,

it was noted that the satellite lakes as well as the rocky out-crop areas within Lake Victoria were increasingly being fished by collectors of ornamental fish and by hand liners respectively. Furthermore, shoreline vegetation was being cleared for the purpose of opening up landing sites or for dragging beach seines. The refugia habitats were, therefore, under threat of being damaged.

Another phenomenon was that of fish poisoning, which was said to have been in practice for quite long before its climax in 1998/99. Kamanyi *et al.* (1998) provided a description of the method of poison fishing. It was carried out in shallow waters, targeting mainly the tilapines. The catch from poison fishing was characterised by a wide range of sizes, an indication of indiscriminate fishing method. Size equivalent to fish from 76.2 mm to 152.4 mm would be landed, usually involving a dragged small mesh sized net as the fish tried to escape from the poison. The poisons used were agro-chemicals, particularly Thiaden (α and β - endo sulfan) (Kamanyi *et al.* p. 48). The indicators of catch from poison fishing included the wide range of fish sizes, from about 14 cm to 40 cm total length, brought in by a single canoe; unusually large catch for the size of fleet used; the fish deteriorated very quickly and when consumed, it caused stomach upset. The fishing communities had tolerated the practice of poison fishing for some time. However, following its escalation in 1998/99 which led to the closure of the lake to fishing for over a month and the ban of Lake Victoria fish to the EU market in 1999 for 18 months, they had become quite vigilant against the practice. Among the bye-laws passed at the landing sites, fish poisoning was rated one of the gravest offences by the communities (Atai *et al.* 2000, MFPED 2000d). However, even at the peak of the practice, sanctioning of poison fishers was extremely difficult due to a combination of constraints. First, there was inadequate provision within the law to cover the offence of poison fishing, so offenders often had to be charged with other less serious offences like immature catch. Secondly, there was lack of laboratory facilities to carry out the analysis rapidly enough to prove the use of poison in the fishing. All cases had to be referred to one laboratory, the Government Chemist, in Kampala. Apart from the difficulties for local leaders of moving fresh unpreserved fish loads from the various landing sites to Kampala rapidly for the test each time, the Government Chemist had its own constraints. These included lack of storage for

such large bundles of samples of fish, lack of reagents and low priority as it was preoccupied with other more urgent analysis to undertake. Thirdly, there was also an element of corruption involved, as enforcement officers, especially realising the difficulties of trying to provide the evidence by securing a chemical test, chose to settle the case out of court, usually with a small fee from the offender. In the process, many offenders arrested by the communities were released only after a short while to go back to the lake, which explained how the practice escalated.

8.4 Effects on Poverty

The next step in the research was to review and consolidate the effects of the different forms of fisheries degradation. This was necessary for formulating policies and other forms of interventions to address the problem. From the outgoing analysis, the indicators of fisheries degradation were declining catches, increased proportions of juvenile catches, disappearance of species from the catch and deteriorating water quality.

Catch decline affected most dimensions of poverty, particularly consumption poverty. Less catch directly resulted into lower earnings, everything being equal. The chain of effects extended down to the processors and traders as well, whose operations were diminished as a result of catch decline. In the process, the ability to obtain food, clothing and shelter were reduced. It also affected the other dimensions of poverty, namely education and health, both of which depended partly on income. As explained in Chapter Five, catch declines, by limiting income and wealth, created a sense of insecurity in the individuals within the community. Furthermore, the uncertainties as to what the next catch would be exposed the individuals or households to an element of risk in the fishery as a source of livelihood. The main effect of increased juveniles in the catch was also reduced earnings, leading to consumption poverty and other types of poverty. Although it was sometime said that juvenile fish sold more easily on the local market, the prices fetched were extremely low. Another effect was in the poor direct consumption by the fish workers who usually consumed part of their catch or product. The taste and texture of certain sizes of juvenile fish were not

considered good. The effect of species disappearance was mainly in consumption. Some of the species which had disappeared, namely *Bagrus docmac* and *Labeo victorianus* were considered delicacies. Since they also fetched high prices, their disappearance reflected a loss in earnings. Lastly, deteriorating water quality affected mainly the health dimension of poverty. As mentioned in Chapter Five, pollution and increasing growth of plants on the lake has led to increase of diseases, namely malaria, diarrhoea and bilharzia. Other common diseases included skin infections, measles, typhoid, cholera and chest infection and most of these were related to deteriorating environmental conditions.

Another outcome of resource degradation was the rise in conflict among the fishers. Conflict did not only undermine the security of tenure of the resource users but it also increased one's vulnerability to the risk of productive asset being lost. On the research, respondents involved in fishing were asked if they were involved in conflicts with fellow fishers during their activities. Although the majority (59.3%) did not, a significant proportion (40.7%) reported having been involved in conflict. Of those who were involved in conflicts with fellow fishers, the majority (41.8%) had their conflicts over fishing grounds, as represented in Table 8.5. When probed further on this, fishers explained that this arose mainly out of nets from different boats getting entangled when set close to each other at the fishing ground, an example of externalities attributed to overcrowding. Propellers of motorised boats often cut through nets set on its way. Fishers involved in active fishing were said to drive away fish from the nets of the others.

Table 8.5: Areas of Conflict Among Fishers (%):

Areas of Conflict	Proportions of Respondents
Fishing ground	41.8
Share of workers	5.4
Equipment	38.1
Buyers	2.1
Price Fixing	3.8
Others	8.8
Total	100

Source: Survey Data

8.5 The Status of Fisheries Management

Having examined the indications and causes of the diminishing fishery resource base, with reduced species diversity, the research sought to provide an understanding of how the resource problems were addressed, through fisheries management. Effective management was essential for sustaining the fisheries, a precondition for alleviating the poverty within the fishery communities. The research model recognised that there was a two-way relationship between resource degradation and poverty, with other side factors also re-enforcing each of these. The fisheries management in Uganda was examined for its effectiveness as a formulation to address the causes as discussed in paragraph 8.3 above as well as the underlying factors as provided in the research model. Issues of implementation were reviewed, assessing roles, capacities and access to resources. On-going management reform initiatives on the lake would also be examined and their implications for the poor assessed.

Uganda operated a state-based management system for all its fisheries, similar to what would be referred to as the “instructive” type, where Government was the dominant player and user groups took the regulations as set by Government and were required to obey them (Sen and Nielsen 1996). The responsibility for formulation and enforcement of the regulations and all the structures,

mechanisms and resource requirements lay with Government. Geheb (1997) provides a historical analysis of fishery regulations on Lake Victoria Kenya. Ikwaput-Nyeko (1999) explores the possibilities for introducing co-management into Lake Victoria, Uganda.

The legal framework for fisheries management in the country was derived from directives of the national Constitution (1995), while the principle legislation were laid down in the Fish Act, cap 228 and Trout Protection Act, cap 229 (1964), supplemented by subsidiary legislation and other key statutes that had direct bearing on the management of fisheries resources. The main ones included the National Environment Statute, No 4/1995; Wildlife Statute, No. 14 of 1996; Water Statute, No. 9 of 1995; The Vessels (Registration) Act Cap 349/1964; the Inland Water Transport (Control) Act Cap 348/1964 and the Investment Code Statute, No. 1 of 1990 (EPRC 1999 p. 122, MAAIF 2000 p. 5). It was noted that the laws relating to fisheries resources in Uganda were scattered in many bodies of legislation. To begin with, it was part of the national objectives of the Constitution of the Republic of Uganda (1995) that the state would protect natural resources, including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda. In Article 237 (2) b, it provided that the National Government or a Local Government would hold in trust for the people and protect for the common good of all citizens, natural lakes, rivers, wetlands, forest reserves, game reserves, national parks and any land to be reserved for ecological and tourist purposes. In Article 245, Parliament would, by law, provide for measures intended a) to protect and preserve the environment from abuse, pollution and degradation; b) to manage the environment for sustainable development and c) to promote environmental awareness. Furthermore, under Article 189 (a) the functions and services specified in the Sixth Schedule to the Constitution (which included land, mines, minerals and water resources and the environment) would be the responsibility of the Government. Although fisheries were not explicitly mentioned on these constitutional provisions, they were assumed to have been covered under them. The constitutional provisions were further strengthened by the Local Governments Act, 1997 as discussed among the other related legislation (Government of Uganda 1997). However, the lack of clear provision within both the Constitution and the Local Governments Act,

1997 for the decentralisation of fisheries resources meant that the management of fisheries resources had to be undertaken through management systems established by both the Central and Local Governments.

Turning to the core legislation, the Fish Act and Trout Protection Act provided for the control of fishing, the conservation of fish, the purchase, sale, marketing and the processing of fish. The Fish Act had formerly been known as the Fish and Crocodiles Act Cap 228 but amended by Act 3/1967 and the Wildlife Statute No. 14 of 1996 (EPRC 1999 p.122, Government of Uganda 1964a). Under the Fish Act, there were the Fishing Rules that prohibited the use of all other types of nets except gill nets and seine nets except with written authorisation from the Chief Fisheries Officer. The prohibited nets were of the following measurements: gill nets of length greater than 100 yards and meshes not less than 3 inch and depth not greater than 12 feet and seine nets of a length greater than 250 yards. Among the other rules was the restriction of landing of fish within the hours between sunrise and sunset. There were various fines tagged to the different rules, the highest of which was UShs 10,000. Over the years, the rules were amended through a series of Orders and Exemptions issued from time to time. Some of the important amendments included the “Limitation of number of nets per vessel SI 228-4” that limited the number of gill nets allowed to be carried in or used to fish from any fishing vessel and the “Limitation of numbers of Licences S1 228-5” which limited the number of licences on a water body. However, these potentially useful orders only applied to selected fragile water bodies of Uganda and Lake Victoria was not considered. The “Fish and Crocodile (Immature Fish) Instrument S1 (5) 1981” set out the length of immature fish. For *O. niloticus* it was 280 mm and for *L. niloticus*, it was 440 mm, applicable to Lake Victoria as well. The “Fishing (Amendment) Rules S1 10/1992” made seine-nets of any length to require the authorisation by the Chief Fisheries Officer for use in specified waters of Uganda.

Among the related legislation, there was the National Environment Statute, No. 4 of 1995. Its interpretation of the “environment” covered the physical surroundings of human beings including land, water, atmosphere, climate, sound, odour, taste, the biological characteristics of animals and plants, and the social factor of aesthetics including both the natural and built environment. The

definition adequately took care of fisheries resources as integral part of the environment. The Statute provided for principles of environmental management to include: encourage maximum participation of the people of Uganda in the management of the environment; use and conserve the environment and natural resources equitably for present and future generations; require prior environmental impact assessments of proposed projects; ensure environmental awareness; ensure that the true and total costs of environmental pollution were borne by the polluter and promote international co-operation in the field of the environment. Section 20 of the Statute required a developer of a project described in the Third Schedule to submit a project brief and to carry out an environmental impact assessment. Among the projects described in the Third Schedule were fish processing plants, commercial exploitation of natural fauna and flora and introduction of alien species of fauna and flora into the ecosystem. The Statute prohibited the introduction of any animal or micro--organism whether alien or indigenous in any river or lake, or on, in or under its bed except with written permission from the Authority. Penalties were laid down, ranging from a fine of not less than one hundred and twenty thousand shillings to thirty six million shillings for offences related to fish. Section 107 provided for Uganda's international obligations with respect to conventions and treaties on the environment. The Statute also provided for the creation of incentives and under Section 89 for a National Environment Fund where sectors such as fisheries could obtain financial resources for use in ensuring the sustainable management of the resource.

The next other legislation considered was the Wildlife Statute (14/1996), which amended the Fish and Crocodiles Act by deleting from it all provisions with reference to crocodiles, so that it became just the Fish Act. Under the Act, the Uganda Wildlife Authority was created and given the mandate to manage all natural resources in the national parks, game reserves and conservation areas. The significant thing was that since the Uganda Wildlife Authority's mandate included managing fisheries resources that were located in protected areas, the DFR could not then be involved in law enforcement in the protected areas. This increased the problem of legislation as policy on fisheries resources would be

found in several pieces of legislation. However, much of this did not apply to Lake Victoria.

Another related legislation was the Water Statute (9/1995) (Government of Uganda 1995). Among the objectives of this statute was to allow for the orderly development of water resources for purposes other than domestic use, such as fishing. It established a Water Policy Committee, which consisted of, among others, the Director responsible for Animal Industry and Fisheries. One of the functions of the committee was to advise on issues of policy relevant to investigations, use, control, protection, management or administration of water, and to review law relating to water and advise the Minister on amendments required. The Statute empowered the minister to declare a controlled area and establish a comprehensive and integrated plan for managing land, water and natural resources within that area. It should be noted that this Statute concentrated more on water supply than other natural resources associated with water so it was not easily discernible as to how fisheries resources could be managed under the Water Statute (EPRC 1999).

The next was the Local Governments Act 1997, which set out to provide for decentralisation and devolution of functions, powers and services at all levels of Local Government (Government of Uganda 1997). In Part 1, Second Schedule, the Central Government was responsible for land, mines, mineral and water resources and the environment, forest and game reserve policy. District Councils were to be responsible for forests and wetlands, fisheries husbandry, and extension services. It provided that the District Executive Committee would, among other functions, initiate and formulate policy for approval of Council and oversee the implementation of the Government and Council's policies. The Act also provided for involvement of lower Local Government Councils through Paragraphs 27 and 31. It could be noted that although the management of water resources was vested in the Central Government, the Local Councils could be involved in overseeing the implementation of the policies. However, there were no clear provisions in both the Act and the Constitution, for the decentralisation of fisheries resources. This meant that the management of fisheries resources would be undertaken by both the Central and Local Government establishing a management system. Policy formulation, legislation and ecological standards

would remain with the Central Government, while their day-to-day implementation was to be undertaken by the Local Government. This arrangement was expected to lead to proper management of the fisheries resources resulting from increased participation and involvement of local communities and other stakeholders. Its success required development of a well-coordinated management system, to minimise conflicts between the Centre and the Local Levels as well as between different interests within the stakeholders. The task of co-ordinating implementation was made particularly difficult by the fact that the management of fisheries resources was provided for in many laws.

The Vessels (Registration) Act Cap 349/1964 made it an obligation to register vessels. A vessel was defined to mean any description of vessel used in navigation and for purposes of registration, numbering and lettering, vessels are divided into three classes. Failure to register made the owner and master of the vessel liable to a penalty not exceeding UShs 600 (Government of Uganda 1964c). After registration, the name of any vessel would not be changed. The relevance of the Act was that as most fish was harvested using vessels, this law would facilitate information on number of boats of the different types in use. A related law was the Inland Water Transport (Control) Act Cap 348/1964, which set out to restrict and control the carriage of goods and passengers by water within Uganda (Government of Uganda 1964b). It provided for the licensing of ships conveying goods for hire or reward, or for or in connection with any trade or business carried out by the person conveying the goods. A ship was defined to include every description of vessel used in navigation not propelled by oars or hand paddles and every lighter, barge or like vessel used in navigation, however propelled. The licences granted could be exclusive to particular areas and were generally not transferable except with the written consent of the Licensing Board. The relevance of this potentially useful law was minimised by the licensing scope which excluded vessels propelled by oars and hand paddles as those were used by the highest proportion of the fishers. However, the Act was more focussed on inland water transport issues like tonnage of ships, weight of goods and number of passengers. As an example, it did not require the shipmaster to ensure the disposal of waste from the ship in an environmentally sound manner (EPRC 1999).

The Investment Code Statute 1 of 1991 was aimed at establishing a liberal framework for the purpose of attracting local and foreign investment (Government of Uganda 1991). It provided for tariff reductions and provision of tax incentives and relaxation on restrictions on profit repatriation for foreign investors as well as assuring investors of the security of their assets against any forms of expropriation. It also provided for the establishment of the Uganda Investment Authority as a one-stop centre for investment; aimed at simplifying the processes and regulations governing investment in various sectors of the economy. The relevance of the Act here was that conditions were imposed on every investment licence. S.19 (2) d of the Code required the investor to take necessary steps to ensure that the operation of the business enterprise did not cause injury to the ecology or environment. This implied that whoever sought to invest in the fisheries industry would have to comply with the environmental considerations required by law. This, together with the requirement for carrying out Environmental Impact Assessment in the National Environment Statute, reflected a change towards considering environmental issues in investment and development activities.

The next step was to evaluate the legislation for its relevance, adequacy and effectiveness. First, many of the laws relating to fisheries resources were outdated and did not reflect recent developments in the status of the fisheries as well as in principles of natural resources and environmental management. In some of the laws, the scope was limited and they did not apply to large water bodies particularly to Lake Victoria, making it the least regulated water body in the country. The fees and fines in most fish related Acts and Statutes were too small in light of the continuous inflation and devaluation caused by currency reforms and were not effective as a sanction to deter offenders. On the other hand, the existing law did not provide adequate incentives, which would encourage the proper utilisation and conservation of the fisheries resources. Provision for informers to be rewarded was socially unattractive. Some of the administrative offices and units referred to in the laws were no longer existing, such as that of the District Commissioner. This could create confusion as to who would be responsible to implement the provisions. The rules on fish sizes only covered *L. niloticus* and *O. niloticus* whereas there were other commercially

exploitable species of fish that needed to be protected under such harvesting restrictions. Legal measures governing small-scale processors and traders were vague and licensing requirements did not appear to include them. Generally, the fishing rules were said to be ambiguous (Geheb and Crean 2001 p. 4). A positive aspect of the legislation was that there was now effective licensing on the main post-harvest sector, namely the industrial processing, if compliance with the terms of the licensing could be enforced, particularly the quota allocations. Some of the limitations within the legislation had been identified and a process had been put in place under LVEMP to review the fisheries legislation with a view to addressing the major weaknesses. A Regional Review Committee was constituted and had been undertaking consultations around Lake Victoria as part of the review process.

As implied from provisions within the National Constitution (1995) and the Local Governments Act, 1997, the state had been responsible for the management of the fisheries resources. MAAIF, through DFR, was the organ of Central Government expected to collaborate with District and lower Local Councils in the management of fisheries. The success of implementation of the management was generally regarded as low. The outcome of this was reflected in an official Government status document as follows: “It is apparent that the stocks of important commercial fish species are declining. The aquatic systems have been characterised by increased pollution load and siltation as a result of increased pollution in the catchment and urbanisation. The fish bio-diversity may have been affected by the introduction of the exotic fish species and water hyacinth. The demand for quality fish both from the foreign and domestic markets is stringent. The administration in the sector has been characterised by lack of community participation which has led to inadequate enforcement levels” (MAAIF 2000 p. 4). The common indicators that the fisheries were not being adequately well-managed were the trends towards declining catches for same fishing effort and growing proportion of immature fish in the catches, among others. Both dimensions were leading to lower earnings to fishers, an indication of how a weakness in the institutional framework could be responsible for the poverty of the fishery groups and regions.

A review of the failure to implement the legislation and carry out effective fisheries management was undertaken and a wide range of issues was identified. To begin with, there were no gazetted places on Lake Victoria for landing of fish and landing sites were operating outside the provision. Fishing was done at night outside the authorised hours of between sunrise and sunset. Prohibited fishing areas in the Fish Act had not been fully set out, leading to overfishing of certain species of fish in certain areas. The use of non-selective and destructive fishing gear and methods such as beach seining, use of wrong gill net sizes and use of chemicals was attributed to outdated laws and poor enforcement and non-compliance. There was poor enforcement of the existing law mainly due to lack of administrative machinery, lack of resources and apathy. There were no patrol boats to transport Fisheries Officials on duty. There was a shortage of trained personnel and scarcity of financial resources to meet the operational expenses. Many of the fishers continued using destructive fishing methods and capture under-sized fish because they knew that enforcement officers lacked capacity to carry out patrols. There was lack of involvement of local communities in the management of fisheries resources. Ignorance of the laws and standards by fishers, chiefs, local administrators and others further increased infringement. Problems of poor attitude existed, as people sought to utilise natural resources without concern for sustainability. The open access regime and the common property nature of the resource were another important management issue, as emphasised in the following quotation. "Rather than education being at the crux of Lake Victoria's problems, its common property status presents severe managerial difficulties, ensuring that fishermen know well that whatever fish they leave behind on one day will only be caught by someone else the next day" (Geheb and Crean 2001 p. 10).

Since Lake Victoria was a trans-national lake, the catchment of which was shared by five countries, namely Uganda, Kenya Tanzania, Rwanda and Burundi, there were also regional issues relating to the management of its fisheries. The Lake Victoria Fisheries Organisation (LVFO) was set up primarily to promote better management of fisheries resources on the lake and to co-ordinate fisheries management with conservation. Uganda was a party to the convention, which was adopted on 30 June 1994. A limitation of LVFO was that it was an advisory,

co-ordinating and liaising body that had no direct control over the lake fisheries resources. Since the Convention did not affect the sovereignty of contracting parties in respect to the portions of Lake Victoria within their respective boundaries, its legal authority was weakened. Consequently LVFO could only be relied upon to a limited extent for sustainable fisheries resource management of Lake Victoria (EPRC 1999). The Kagera Basin Organisation (KBO) was established in 1977 by agreement entered into by Burundi, Rwanda, Tanzania and Uganda. The agreement was aimed at, among others, the integrated conservation and development of the fisheries industry but it had not yet become fully active. Recently, however, KBO had been rendered inoperable due to political instability in the region, lack of funds and lack of a focused mandate for the convention. The overall situation was, therefore, that although there were conventions setting up regional institutions on Lake Victoria and the catchment, management and conservation of fisheries resources remained within the national scope of member states, which made them prone to over exploitation.

The DFR was working towards putting in place a new fisheries policy, the overall goal of which was to ensure increased and sustainable fish production and utilisation. This would be achieved through proper managing of capture fisheries, promoting aquaculture and reducing post harvest losses. The first specific objective of the policy was to promote fisheries management in a sustainable manner involving participation of stakeholders (MAAIF 2000 p. 10). There were already a number of initiatives leading towards achieving this goal. The Lake Victoria Environmental Management Project (LVEMP) was part of these initiatives, through the Fisheries Management Component of the project. The objective of the component was to improve the overall management and promote sustainable utilization of the Lake Victoria fisheries resources for the present and future generations. This would involve harmonisation of legislation among the three countries, identification and establishment of closed fishing areas for gazetting as sanctuaries important for fish breeding, nurseries and juvenile feeding; strengthening of law enforcement and incorporation of local communities in fisheries management. Other activities included strengthening fisheries statistics, enhancing fish quality control and the fish levy trust study.

A regional task force on fish legislation was constituted to look into areas of harmonization under fisheries regulations and legislation. The task force had completed its work and the Fisheries Departments in the three countries were developing recommendations to their Attorney Generals (AG) on areas of possible amendment in the Fisheries Act. The AGs would prepare amendment Bills which, if passed by parliaments in all the three countries, would make all the Fisheries Acts in the region harmonized. In Uganda, those consultations were mainly done with district officials at the different level. Personnel from DFR as well as from the districts have been trained and equipment provided to strengthen fisheries regulations. The project had been working with NGOs to prepare the LMCs for roles in fisheries management through sensitisation and training. Surveys were being carried out, with participation of local communities in the different districts, to identify areas for gazetting as closed fishing areas.

Other initiatives aimed at contributing towards strengthening fisheries management on Lake Victoria were under the Lake Victoria Fisheries Research Project (LVFRP). The project's second phase, which began in 1997, was aimed at assisting in the development of a management framework for Lake Victoria fisheries and strengthening the knowledge base upon which such a framework would be founded. The major components of the project included: i) institutional strengthening through support of the LVFO committees on fisheries research and management and support for scientific meetings; ii) stock assessment, involving acoustic, trawl and gillnet surveys and associated biological and statistical studies; iii) trophic web studies; iv) socio-economic studies on fish marketing, co-management and community nutrition. Following the successful completion of most of the surveys, the information was being utilised to develop a management plan proposal, which would be widely discussed and adopted for the lake. Geheb and Crean (2001) presented suggestions of what the management plan for Lake Victoria might take. They argued that in the case of Uganda, the fishing communities had failed to grasp the opportunities presented by the Government within the Local Governments Act, 1997. Other limitations included the ambiguity and consequently the lack of clear understanding of the regulations; reluctance by Government to transfer power to the fishing communities or to endorse local level regulatory institutions. There was also a

contradiction between pursuit of livelihood objectives and those of fisheries management. The authors noted the excessive emphasis on biology and stock assessment in providing information for management and research structures, pointing out the high costs involved. The knowledge and abilities of fishing communities were also said to be underestimated. Capacity of formal fisheries institutions within the region to regulate the fisheries was said to be minimal. Their last concern was with the problems of the common property ownership and open access to the resources. Their recommendations include a three-level management structure, consisting of the Beach Committee (BC), District (DC) and Regional Committees (RC). The BC would consist of representatives of fishing communities, fish processing factories, DFR and any other relevant groups. Their role would include the identification of regulations that they believed were just and fair and which they were capable of implementing, monitoring and enforcing. They would also be responsible for sanctioning of these rules by means of punishments that the community agreed upon. Lastly, they would be represented on the DCs. Their funding would come from the various beach contributions. The DC would be responsible for, among others, higher levels of formulating regulations and sanctioning of rules, co-ordinating and informing the BCs. It would also arrange for representation on the RC. Lastly RC would operate under the auspices of LVFO and be responsible for co-ordination at the regional level. The authors explained that the logic behind the proposed structure was that the formulation of regulations for Lake Victoria should be a product of negotiated process between the various stakeholder groups.

As part of the process of contributing towards the formulation of a management plan for Lake Victoria, a series of stakeholder workshops were conducted under the LVFRP, one in each of the riparian countries. The overall objective was to provide an opportunity for stakeholder groups to come together and reflect on the management of Lake Victoria resource (ICRC and ODS 2001 p. 1). The stakeholders made their own suggestions of what they wanted to see in the improved fisheries management on the lake. Socio-economic, environmental and legislative considerations were advanced in justification for strengthening fisheries management. Among the key issues were the attainment of sustainable

sources of livelihood, national economic development, empowerment of stakeholders, the health aspects of environmental management, strengthening of legislation and its enforcement. On the question of roles and responsibilities, the stakeholders provided a list of the relevant stakeholders and their functions. Although this was the product of an initial brainstorming exercise, it provided indications of how they viewed the roles for the various stakeholders in the fisheries. Some of the stakeholders accorded the highest number of roles were the Fishers, the Fisheries Department, NGOs/CBOs and Local Authorities. However, LMCs were among the stakeholders perceived to have rather few roles in fisheries management (ICRC and ODS 2001 Appendix B: p. 3).

The process of strengthening fisheries management on the lake would require obtaining consensus around certain key issues as well as co-ordination of initiatives aimed at contributing towards the exercise. While there was considerable common ground between the Government's and stakeholders' views of the desired management, there were also differences that needed further deliberations. On the question of ownership and access, the Government was clearly for limiting access to the fisheries, as stated in its first policy objective as follows: "To ensure a sustainable harvest (catches) of fish in lakes and rivers by shifting from Open Access Fisheries (OAF) to Effectively Controlled Fisheries (ECF) (MAAIF 2000 p. 10). The stakeholders, on the other hand were for open access, desiring: "maximisation of the sustainable utilisation of the resource, ensuring access and benefits to all user groups and continuity of a better quality of life for future generations" (ICRC and ODS 2001 p. 4). The question of access was fundamental to the management regime and needed to be resolved right at the beginning. Another area was that of boundaries. Part of the objectives of the lake-wide surveys carried out under the Fisheries Management Component of LVEMP was to help in the exercise of demarcating boundaries for areas that the various communities could look after under co-management. During the research, however, fishers found the suggestion to limit migration rather difficult to accept, arguing that the resource they exploited was mobile and needed to be followed. There was also the question of approach to strengthening of legislation, on which consensus would have to be reached. Geheb and Crean (2001) suggested that laws and regulations under the plan would be generated by

negotiations and consensus, placing the responsibilities with BC and, to a lesser extent, with DC and RC. No role seemed to have been foreseen for DFR in making regulations. In its policy document, however, DFR clearly saw its responsibility in this, provided for by the Constitution as well as the Local Governments Act, 1997. The policy document stated: “ Government shall enact appropriate fisheries legislation that is effective in ensuring equitable and sustainable resource harvest” (MAAIF 2000 p. 11). These positions would have to be reconciled. Other positions that needed to be reconciled included the level of involvement of local communities and the amount of biological information required as input into management. Concerning the timing of events, the research would also have to move rather fast, before its recommendations were overtaken by developments on the ground, as the two processes seemed to be going on in a parallel manner.

8.6 Relating Fisheries Management to Poverty

A major challenge for the initiatives to strengthen fisheries management was how it would contribute to the goal of poverty alleviation within the fisheries. In the long run, improved resource base would enable better catches to be realised for better earnings. However, in the short run, the poor were likely to be adversely affected. Because of limited capital, they could not afford the recommended types of gear and were among the main users of destructive gear. Consequently, they would be expected to suffer the full effect of improved enforcement of regulations. Provisions would be required to assist them to participate in sustainable fishing. Furthermore, as in most interventions, there would be losers as well as winners under the reorganisation of fisheries management and many of the poor could be among the losers, having to face the exit from the fishery. Provisions for livelihood outside the fisheries needed to be built into the policies. For the poor who would remain in the fisheries, there would be the problem of participation under a co-management regime. In Chapter Five, it was reported that the poor were often intimidated and discriminated against by the very communities within which they operated. Generally, they stood little chances of effectively participating, especially in the leadership of the local institutions. This position was worsened by their inability

to contribute significantly financially towards common activities at the landing sites. They were also less educated and were associated with ill-health, both factors limiting their capabilities for participation and leadership in the communities. The fisheries policy was not specific on how participation of the poor, who formed the majority in the fisheries, would be secured. In the absence of any measures to ensure their participation, co-management would in practice deliver the resource in the hands of a few local rich and influential people, whose narrow interests would drive the fisheries. The problem of excessive exposure to risk was another dimension of poverty among the fisheries. The policy and management would have to identify ways of providing some shield against the risk for the poor. Many of these measures would have to revolve around resources, capacity building, facilities and services. The scope of interventions was, therefore, broad, implying that fisheries policy and management would have to be integrated with the overall development policies and programs of the districts and the country as a whole to tap into them to address the wide range of issues pertinent to fisheries sustainability and poverty alleviation.

8.7 Lessons from Related Initiatives

In seeking to improve the livelihoods of fishing communities through better fisheries management on Lake Victoria, lessons can be drawn from the experiences of related initiatives elsewhere. In this respect, two examples are reported here, depicting some of the positive and negative outcomes often associated with such interventions. The first example is the Sustainable Fisheries Livelihoods Programme (SFLP) in West Africa, a partnership between FAO, DFID and 25 participating countries of West Africa. SFLP seeks to reduce poverty in coastal and inland fisheries communities by improving the livelihoods of people dependent on fishery and aquatic resources. This is to be achieved through development of social and human capital in fisheries-dependent communities; enhancement of the natural assets of those communities and development of appropriate fisheries policy and institutional environments. The five-year Programme, which began in 1999, is financed by DFID and is implemented by FAO. The participating countries include Angola, Benin, Burkina Faso, Cameroun, Cape Verde, Central African Republic, Chad, Congo,

Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone and Togo. There are almost seven million people in the region whose livelihoods are directly dependent on the use of marine and freshwater resources. The Programme's primary beneficiaries are the resource-users in artisanal fisheries communities, with focus on the most vulnerable groups, namely fishermen, small-scale traders and fish processors, most of whom are women. The secondary beneficiaries are the Fisheries Departments plus other related government services, NGOs national and regional sectoral planners and other individuals with responsibility for proper management of the fisheries sector.

It uses the programme approach, focusing on Sustainable Livelihoods Approach (SLA) and the Code of Conduct for Responsible Fisheries (CCRF). SLA recognises that individuals draw upon at least five characteristic capital assets, namely human, natural, physical, social and financial, to build their livelihoods and these assets are intrinsically considered in the implementation of the CCRF. Consideration of all five assets enables resource users to think holistically rather than sectorally about the basis of their long-term resource-use and their livelihoods. The beneficiaries are encouraged to play an active and essential role in the identification and implementation of decisions that will influence their lives. The CCRF is a policy instrument whose objective is to contribute to the realisation of sustainable benefits in the fishery sector in terms of employment, economic welfare and food security. The Code also states the principles and criteria applicable to the conservation, management and sustainable development of all fisheries. The combined application of the SLA and the CCRF is used to secure long-term sustainable fisheries management and sustainable livelihoods.

The Programme strategy is to reduce poverty and its incidence on fisheries communities by supporting them at the grass-root level. However, their active participation in activities aiming at improving livelihoods depends on their own perception of poverty or vulnerability to poverty, its causes and the opportunities available to them to cope. The Programme, therefore, seeks to help to create the necessary conditions for communities to be able to assess their environment and their situation. To promote this awareness, the SFLP is involved in carrying out

sensitisation and capacity building activities to develop reflection, analysis and debate within existing community structures.

The SFLP activities are aimed at the promotion of local and regional initiatives in fisheries, which are respectful of the natural environment. These include national execution of the Small Projects under the responsibility of the National Co-ordination Units and the Pilot Projects at a sub-regional or regional level. The Small Projects are low cost community initiatives focused on small-scale activities designed to respond to locally significant issues. These projects serve to strengthen the assets and improve the structures and processes of the community, which influence livelihoods. The Pilot Projects are large investment initiatives to address significant regional or sub-regional issues or constraints, which are clearly related to livelihood security of many poor fisheries communities. The stakeholders and governments have the responsibility of identifying these issues through a participatory process and demonstrating clear commitment to address them. The solutions to such issues have not only to be realistic and achievable but also be environmentally, socially, institutionally and economically sustainable, after the project ends.

SFLP is an example of how to achieve lasting impact in governance at central and local levels and in policy at both national and international levels. Incorporation of relevant elements of the CCRF into national fisheries development and management plans and participation of local communities in the planning and management of the aquatic resources would lead to greater sustainability. The livelihoods of poor people would be secured and in many areas, improved. The experience and knowledge would have been disseminated elsewhere in the region and in the wider international sphere with beneficial consequences.

The second initiative was the Integrated Coastal Fisheries Management (ICFM) Project, a five-year project that began in 1992, funded by UNDP and implemented by FAO. The development objective of the project was to contribute to improving the well being of coastal communities through better management of marine and land-based coastal resources and by protecting the coastal ecosystems as the basis for sustainable development. The immediate objective was to develop and improve methodologies and co-ordinating

mechanisms for integrated coastal fisheries management and to prepare a detailed document for an enlarged programme phase (FAO 1998a). The project strategy was to focus on the management of resources for sustained economic use that directly or indirectly enhanced the well being of coastal communities, particularly those depending on fisheries for their livelihood.

Pilot activities were carried out on a selection of special issues related to the integrated management of fisheries in coastal areas of regional or global importance. In terms of ecological settings, these included coastal reefs, mangroves, lagoons and river basins. On the sectoral basis, while fisheries and fishing communities received primary attention, the impact of other sectors on fisheries was also considered. In socio-economic terms, approaches for the resolution of conflicts between small-scale and large-scale producers received special attention. Three pilot sites comprising the coast of the Gambia, the municipality of Bolinao, Lingayen Gulf, the Philippines and the coast of the Gulf of Paria, Trinidad and Tobago were selected.

The experiences of the project revealed that the complexity of coastal zone management issues clearly increases with economic development and diversification, as other sectors expand and claim an increasing share of such available natural resources as space on land and in the sea, critical habitats, fresh water and other resources. Integrated planning and institutional co-ordination which are the primary requirements for effective ICFM are in practice, both difficult to achieve and entail significant costs. The difficulties and costs are due to the often cumbersome bureaucratic structures and procedures of government agencies, the complexity of the scientific, technical and economic issues involved and the potentially large number of decisions which need to be taken in an informed way. In addition to high administrative costs, the decision-making process often becomes so lengthy and protracted that economic development is unduly slowed down.

As integrated development leads to the decline in its relative economic importance in coastal areas, the fisheries sector is increasingly exposed to adverse environmental impacts by other sectors, particularly industry, urbanisation and tourism. The fisheries sector and its institutions may not carry the economic and institutional weight needed to guide and co-ordinate a multi-

sectoral management process in the coastal area. Furthermore, the capacities of fisheries departments to undertake integrative work is limited by the fact that planning and economic expertise is either scant or absent. The costs of a formal process for the preparation of a coastal area management plan may only be justified in areas of existing or planned intensive multi-sectoral utilization of coastal resources. There is also need to carefully assess the kind of capabilities and capacities fisheries government agencies and fisheries research institutions should possess in future for effective adoption of the ICFM.

The experiences of the project, therefore, showed not only the practical difficulties of implementing integrated approaches to coastal development required for poverty alleviation but the threats to fisheries management associated with it. Fisheries management would have to take consideration of these factors and prepare to address them

8.8 Conclusion

In this chapter, the fisheries resource was examined as a factor in poverty among the fishing communities, as postulated in the model. The objective was to explain how fisheries resource availability effected poverty among the different sections of the communities. According to theory, a two-way relationship existed between poverty and fisheries resource degradation, driven by human as well as natural factors.

The characteristics of the fisheries resource degradation were first examined. Reports by the fishing communities, based on their experiences with the fishery as well as those from scientific studies indicated that overall catch rates were declining; catch rates for individual major species, namely *L. niloticus*, *O. niloticus* and *R. argentea*, were also falling and the proportion of immature fish in the catches was increasing. The scientific information further showed that since the 1970s, stock and species abundance on the lake had fallen. The quality of the water had also been deteriorating.

Deterioration in fisheries resource was attributed to affluence among fishers, fish processors and overseas consumers, leading to catching of more fish than their needs. High population growth rates, estimated at 2.5% per annum and lack

alternative employment sources in the rural as well as urban areas, increased pressure on the lake. Limited access to land, lack of farming inputs, unpredictable weather patterns and lack of market contributed to the influx into the fisheries. Catching of immature fish was caused by the demand, created by the low purchasing power among domestic consumers. Due to poverty, many fishers could not afford the cost of the recommended fishing gear, resorting to the use of cheap but destructive fishing equipment and methods. Species introductions, particularly of the predator *L. niloticus* and of water hyacinth, also had effect on the fisheries and water quality. Human activities within the catchment of the lake resulted in pollution. Natural causes were also identified, notably eutrophication. Destruction of the shoreline wetland, functioning as a filter against pollutants, nursery and refugia for fish, exacerbated the problem. Other practices were also responsible for destroying essential fish habitats.

The effects of the different types of resource degradation on poverty were examined. Declining catch rates had impact on income poverty for producers and the effects were felt down the chain by processors and traders as well. Through diminished income, catch decline had effect on food, clothing and shelter as well as other dimensions of poverty, namely education and health status, as these services had to be partly paid for. Unpredictable catch also created risks and uncertainties among fishers.

The effect of increased juvenile catch was to decrease earnings and increase consumption poverty. It was also a poor quality commodity for consumption. Species decline had an effect on consumption poverty, as it resulted in lower incomes as well as food for direct consumption. Deterioration in water quality affected not only fish production and income poverty but also the health dimension of poverty. This was due to the infections associated with poor quality water. Conflicts in different areas were attributed to resource degradation and this created a sense of insecurity among the fishes.

In order to find ways of improving the resource, the status of fisheries management was examined. Uganda operated a state-based management system, referred to as the “instructive” type (Sen and Nielsen 1996). The legal framework for the fisheries management was derived from Uganda’s Constitution of 1995, strengthened by the Local Governments Act, 1997. The Fish Act, cap 228 and

the Trout Protection Act, cap 229 (1964) provided the main legislation, supplemented by subsidiary legislation and other key statutes that had direct bearing on the management of fisheries resources. However, the limitations were that many of the laws were outdated and did not reflect recent developments in the status of the fisheries as well as in principles of natural resources and environmental management. The scope of some of the laws was limited and the fees and fines too small. The rules on fish sizes only covered *L. niloticus* and the tilapines and the legal measures governing small-scale processors and traders were inadequate. Generally, the fishing rules were said to be ambiguous (Geheb and Crean 2001). Despite these weaknesses, however the positive aspect was that effective licensing on the main post-harvest sector, namely the industrial processing, was introduced.

However, the success of implementation of the management was generally low. There were no gazetted places on Lake Victoria for landing of fish and landing sites were operating outside the provision. Fishing was done at night outside the authorised hours of between sunrise and sunset. Prohibited fishing areas in the Fish Act had not been fully set out, leading to overfishing of certain species of fish in certain areas. There was poor enforcement of the existing law mainly due to weakness in the administrative machinery, lack of resources and apathy. There were no patrol boats to transport Fisheries Department staff on duty. There was a shortage of trained personnel and scarcity of financial resources to meet operational expenses. There was lack of involvement of local communities in the management of fisheries resources. The open access regime and the common property nature of the resource were other important limitations. Initiatives were, however, going on to put in place a new fisheries management system, and the two regional projects, LVFRP and LVEMP were involved in working out the details and resolving any contradictions arising between the different parties.

Since Lake Victoria was a trans-national lake, the Lake Victoria Fisheries Organisation was set up to promote better management of fisheries resources on the lake and to co-ordinate fisheries management with conservation between Uganda, Kenya and Tanzania.

What remains a challenge is, however, how to make fisheries management contribute to the goal of poverty alleviation. This would require ensuring that the

interests of the poor are adequately taken into consideration in the process of improving the management. This is because many of them are users of illegal gear, so there is need for a program to assist them to adopt sustainable fishing practices while at the same time settling some of them on alternative livelihood activities. Poor people were reported to suffer a sense of insecurity within the landing site communities, so enhancing their participation under a co-management system for the resource needs to be addressed. Furthermore, action is needed towards the state of risk to which the poor were exposed through appropriate programs. The range of accompanying action was, therefore wide, calling for effective integration with other policies and programs in the country.

The thesis has been able to draw useful lessons from the experiences of relevant projects for strengthening livelihood in fisheries and for fisheries management.

CHAPTER NINE

ECONOMIC FACTORS IN POVERTY

9.1 Introduction

This is the last of the chapters aimed at contributing to the research objective of examining the causes of poverty among the fishing communities. Because they are closely related, the factors identified on the research model in Chapter Four as economic, financial and market mechanism are analysed together under this chapter. These factors have gained significance as a result of the growing market orientation of the fisheries activities and are likely to influence the viability of productive activities. In the layout of the chapter, selected economic policies are introduced and their effects on the fishery activities discussed. This is followed by analysis of the market within which the fishery units operate, identifying its critical features and how they limit fishery activities as sources of livelihood. The status of financial resources among the operators and their access to financial services are examined. This is followed by analysis of economic factors selected for their effects in contributing to poverty within the units of activities. The output of this chapter will include elaboration of methodologies for investigating the selected key economic aspects of fisheries livelihood activities, data and information on those aspects, identification of the needs and concerns of economic nature, assessment of public policies towards addressing the needs and proposals on how the policies and strategies could be strengthened.

9.2 Effects of Major Economic Policies

Uganda's major development policies were introduced in Chapter Two in the overview of Uganda, aimed at providing the background to the poverty in the fisheries and the context within which the research was carried out. Reference has also continued to be made to the major policies and programs, namely PEAP, PMA and NFP throughout the analysis in the thesis. It is not, therefore, the intention to review all Government policies once again here but to examine a

selection of what are generally referred to as Uganda's major economic policies with a view to analysing their effects on poverty within the fisheries.

Like most other sectors of the economy, fisheries were affected both positively and negatively by the policy reforms implemented by the Government under the Structural Adjustment Programme (SAP). The World Bank (1998b) provided a summary of the seven major structural adjustment credit operations that were undertaken in Uganda since the economic reforms started in 1987, totaling US\$ 940.4 million. They included the Economic Recovery Credits I & II; Structural Adjustment Credits I, II & III; Country Assistance Strategies of the World Bank for the Period 1990-2000; Agricultural Sector Adjustment Credit (ASAC); Financial Sector Adjustment Credit (FSAC); the Heavily Indebted Poor Countries (HIPC) debt initiative and the Programme for Alleviation of Poverty and Social Costs of Adjustment (PAPSCA). These operations could be broadly categorised in two parts. The first consisted of a set of economic stabilisation, or demand management measures including devaluation of the national currency, abolition of price controls, liberalisation of internal and external trade and imposition of financial austerity measures to balance the national budget. The second group provided for privatisation of public enterprises; retrenchment of staff in the public sector; creation of a legal and regulatory environment conducive to private enterprise and generally replacing the role of the state in the economy with that of market forces.

One of the structural adjustment measures was financial austerity, undertaken in order to balance the budget and reduce inflation. It involved public expenditure cuts, higher taxation and also introducing cost-sharing in the provision of basic services like education and health. Financial austerity is considered to have caused a rise of production costs in the fisheries and contributed towards eliminating the poor from the activities. It also resulted in denial of education and health services to the poor, worsening those dimensions of poverty among them. Under the policy, Uganda agreed to control expenditure to GDP ratio, estimated to be about 10.7% in 1989/90, to be limited to about 15.5% in 1991/92. Subsequent public expenditure cuts saw the Government end all subsidies on fishing inputs by the end of the 1980s. Prior to this, much of the fleet on Lake Victoria had been sold to the fishers by the Fisheries Department at prices well

below the market rates. This had been made possible through subsidies from Government as well as through donor grants. The last of these consignments, consisting of outboard engines, nets, twines and floats, was provided under a EEC grant project, the Artisanal Fisheries Rehabilitation Project (AFRP) in 1987-1991 (FAO 1999). Removal of subsidy suddenly exposed the poor fishers to the full market prices for the inputs.

The higher taxation measures, part of the financial austerity, caused further rises in cost of fishing inputs. Under the policy, Uganda agreed with the World Bank that it would undertake improvements in revenue mobilisation that would raise the tax to GDP ratio from 7.9% in 1989/90 to 9.4% in 1991/92 (World Bank 1998b). In recognition of the adverse effects of the new tax regimes on production and welfare of the poor, concessions were given on import and sales taxes on farming inputs. However, fisheries were excluded from these concessions, a further weakness in policy that was detrimental to the fishing poor.

Privatisation and liberalisation were also part of the policies under SAP. Under the privatisation policy, Government initiated a large campaign in 1991, intended to transfer the ownership of business enterprises from public to private hands (EPRC 1999). This was in recognition of the limited capability of Government to effectively deliver quality management for profit making. The privatisation policy would confine the role of Government to enforcing market rules, collecting taxes and providing an enabling environment for business. It would thus free previously tied-up public resources for higher priority uses such as rural development and poverty alleviation. To co-ordinate the privatisation program, Government established the Public Enterprise Reform and Divestiture (PERD) Programme in 1992. The program sold off most Government owned corporations and eliminated Government trading monopolies. The essence of the privatisation policy was that Government divested itself of responsibilities of commercial nature, leaving such roles to the private sector. In the fisheries, that again affected the supply of inputs to the fishing communities. Prior to this move, private dealers in these items had been restraining their own prices in order to get a share of the market from the Fisheries Department. However,

when Government ended its role in the sale of inputs, prices soared up as private dealers saw a major competitor move out of their way.

Under the market liberalisation policy, Government reduced controls over both the import and export markets after 1987. Three policy measures were implemented under this program, each was intended to create a conducive environment for private sector competitiveness and investment. There have been some benefits to the fisheries from this policy. First, overseas export of fish and the legalisation of cross-border trade provided opportunities for fishers and traders from Lake Victoria and other Ugandan water bodies to earn higher prices from the export of their fish abroad as well as to the neighboring countries of Kenya, Rwanda and the Democratic Republic of Congo. Secondly, as a result of the liberalisation policy, there was an increase in the supply of required fishing gear, of types and sizes meeting regulations, on the market. Hitherto, gill net supply was the monopoly of Uganda Fishnet Manufacturers Ltd., which could only meet 30 per cent of the overall demand for nets. The shortage of fishing nets had led to high costs for them. This in turn, caused fishers to resort to the use of illegal fishing practices. Another advantage usually cited was an indirect one, whereby the export of fish generated foreign exchange earnings for the country, necessary to obtain equipment needed under the various poverty alleviation programmes.

However, there were also negative impacts from the liberalisation policy measures. Under these measures, Government relaxed control over the currency exchange rates. The Uganda Shilling was allowed to find its own level, determined by market forces. As a consequence, its value has declined as shown by the official middle exchange rate rise from UShs 935.04 to 1US\$ in 1991 to 1,525.90 in 2000 (MFPED 2000a p. 28, UBOS web site). Earlier on in 1987, there had been a major currency reform, under which there was the introduction of a new currency equivalent to 100 old shillings coupled with a 30% tax on currency and bank deposits held by the public. In the process, the shilling was devalued by 77% in the foreign currency terms (World Bank 1998b). These monetary developments caused increases in the cost of the imported fishing inputs.

Another measure was the liberalisation of the interest rates. Prior to the policy, Government controlled borrowing rates from commercial banks. Liberalisation resulted in rises in rates on funds loaned out by the financial institutions, making the loans no longer attractive. As an example, between 1995 and 1999, the commercial bank lending rate to agriculture rose from average of 20.2% per annum to 21.6% (Bank of Uganda data). This policy, therefore, had a negative impact on investment by artisanal fishers. Liberalisation also resulted in big increases in the prices of petroleum products. As a proportion of the fishery was motorised, the operations became unprofitable for some of the fishers due to high fuel costs, thus driving them down into the “boat and paddle” fishery. This resulted in lowering of earnings for both the owners of the units and labourers. Transportation of fish using vehicles was equally affected, with impact on fish traders as well as consumers.

The last of the SAP policies reviewed was the investment promotion policy. The policy began in 1987 and was aimed at encouraging private investment through tariff reduction and provision of tax incentives. The Government also relaxed restrictions on profit repatriation for foreign investors and offered assurances of the security of their assets against any forms of expropriation. The policy, in conjunction with the other policies described above, stimulated growth of the industrial sector in the country in general, and the fish-processing sub-sector in particular. The National Fisheries Policy states: “The general climate of regained political stability and a package of policy incentives, particularly in the non-traditional sector, have contributed to the rapid emergence of this industry” (MAAIF 2000 p. 4). The number of fish processing plants increased to 13 in 1996, with approved processing capacity of 51,480 tonnes per year but at the time of writing, only eight of the plants are operational.

Table 9.1: Number of Industrial Fish Processing Firms, Total Approved Capacities, Fish Purchases and *L. niloticus* Prices, 1990 – 1997*.

Year	No. of Firms	Approved Capacity (Tonnes/Year)	Fish Purchases (Tonnes/Year)	<i>L. niloticus</i> Prices (UShs/kg)
1990	3	14,300	4,992	300
1991	6	30,680	14,061	400
1992	7	31,980	14,553	500
1993	9	39,780	18,414	400
1994	9	39,780	19,692	800
1995	12	50,180	48,138	800
1996	13	51,480	39,300	1,000
1997	9	35,880	30,840	1,000
1998	9	35,880	24,000	1,000

Source: MFPED 1998, DFR & Fish Processing Industries records

* Annual estimates based on 260 working days in a year.

These policies had both positive and negative effects on poverty among the fishing communities. First, the increased demand for raw materials for the fish factories stimulated higher prices and increased revenue to the fishers. To illustrate the point, the price of *L. niloticus* on Lake Victoria rose from UShs 300 per kg in 1990 to UShs 1,000 in 1997 (Fisheries Department, 1994, 1996, 1999). This provided opportunities for fishers to earn higher incomes from their catch, through which they could also improve their nutrition and health. Secondly, the growing fish processing outlets created increased demand for high quality raw materials. This stimulated investment in infrastructure and landing facilities with the firms themselves contributing resources to these undertakings. More importantly, the Local Government, which collected revenues from fish, began to appreciate the need to improve infrastructure and facilities at landing sites and have since shown willingness to allocate budgetary resources towards the development of these facilities and centres. Improved infrastructure and facilities are necessary for the fishery operators in their efforts to minimise post-

harvest losses. The efforts so far have included access roads and clearing water hyacinth mats and most districts have shown concern.

However, the policies also had negative effects on the poor. First, it should be pointed out that the benefit of high fish prices created by industrial processing and export went to the relatively rich fishers involved in supplying the processing plants and not necessarily to all fishers. The poor were not involved in this because of the high level of investment in boat, gear and engine required. Their line of production was for the domestic market, where demand and prices were low because of the prevalence of poverty. Turning to the direct disadvantages, the development of industrial fish processing deprived a large section of the artisanal middlemen of a source of livelihood (Abila and Jansen 1994). Not only were the artisanal processors, domestic and regional traders unable to obtain sufficient supplies of fish but the high prices for the fish constituted high cost of operation and reduced their profit margins. The increased demand for fish and the attractive prices created also increased the influx of people into the fisheries sector. This led to unplanned growth of settlements at the landing sites and the resultant poor sanitation, which depressed the health status of the poor even further (FCSEP 1997). Furthermore, the increase in people was a cause of the overfishing of the resource, leading to declining catches and further poverty for the communities. Another dimension was that for the poor who were linked to the export market, particularly the fishing labourers, over-dependence of the fisheries on the trade had exposed them to risk from the external factor over which the country had little control. There have been a few examples in the past, notably the 1998 and then the 1999-2000 ban imposed by the European Union on Lake Victoria fish for reasons related to public health. The vulnerable position of the poor under such circumstances reflected how the market liberalisation policy exacerbated their impoverishment. While the high fish prices resulting from the policies were a welcome development for some of the fishers, it deprived many domestic consumers of this source of food as they could not afford the competitive prices set by the export demand. This was revealed by the shift in consumption patterns of local consumers to relatively cheap fish frames, juveniles and *R. argentea*. The magnitude of the negative effect of this on nutritional and health status was yet to be established. The increased demand for

juvenile fish posed a significant threat to the sustainability of the fisheries resource, leading to catch declines and further poverty among the fishers.

The negative impacts of some of the policies under SAP were, by no means, confined to poverty in the fisheries but other sectors experienced similar problems. The sentiments were expressed by a Ugandan writer, Okune (1998 p2.) as follows: "It is the view of civil society that structural adjustment programmes prescribed by the IMF and the World Bank are too much concerned with economics, "the dismal science", and too little with social and humanitarian issues. This one-sided preoccupation with economic balancing at the expense of social well-being is attributed to the fact that the conception and design of SAP is confined to Government, the IMF and the World Bank only. The ordinary people in the country whose social conditions are bound to be adversely affected by SAP measures are excluded from the decision process. Even within Government, only a few ministries, namely; the Presidency, the Ministry of Finance, Planning and Economic Development and the Central Bank are privy to SAP decisions. In the opinion of civil society, this exclusive and secretive process of introducing SAP is responsible for the absence of any feel-good factors in SAP, especially the short-term and long-term provisions to protect and empower the majority, who are poor, to participate effectively in, and benefit from, the market economy system created by SAP. It also explains why economic growth attributed to structural adjustment programmes tends to benefit only a few, leaving the vast majority in poverty".

In an attempt to respond to the concerns over the adverse social impacts of SAP on the poor, the Government and the World Bank undertook to implement the Programme for Alleviation of Poverty and Social Costs of Adjustment (PAPSCA) in 1988-1995, at a cost of US\$ 106 million (World Bank 1998b). This would be through collaborative and integrated development interventions between communities, NGOs and the Government. Some of the objectives included rehabilitation of primary schools; social dimensions of adjustment; support to orphans in Rakai, Masaka, and Gulu; small-scale infrastructure rehabilitation; low cost sanitation improvement, support to widows and primary health care. None of the activities compensated the fishers directly for their loss of income resulting from SAP policies. Even then, many of the components of

the project were not successful due to implementation failures. The project was said to have failed to impact on poverty (World Bank 1998a).

To summarise, the concerns under economic policies were that the costs of production rose as a result of the various policies. Furthermore, the poor were not able to take advantage of the rising fish prices created by the emergence of industrial fish processing for export because of the high level of investment in boat, gear and engine required. The industrial processing for export also resulted in the loss of livelihood opportunities to artisanal processors and traders, through the resulting high cost of fish. It also deprived many domestic consumers of fish as a source of food as they could not afford the competitive prices set by the export demand. The high prices also increased demand for juvenile fish, which posed a significant threat to the sustainability of the fisheries resource, leading to further poverty among the fishers. Through the trade, fishers were exposed to risk from the external factor over which the country had little control. The attractive prices created an influx of people into the fisheries sector, leading to unplanned growth of settlements at the landing sites. This in turn led to poor sanitation, which depressed the health status. On another front, the privatisation policies led to the ending of subsidies and the poor lost the opportunity to obtain inputs at affordable prices.

The analysis of policy above focused on the indirect effects of policies on the fishery operators. The research also sought to establish the level of awareness among fishers of the policies and how they perceived of their effects on their activities. Under the survey, respondents were asked if they thought Government policies had affected their fishery activities. The results are presented in Table 9.2. The table shows that among the people involved in fishing and fish marketing, the majority thought their activities were affected by policies but among artisanal processors, majority thought their work was not affected. Concerning the factory agents, as explained in Chapter Four, they were few because the survey took place during the period of an EU ban on Lake Victoria fish. However, they all agreed that policies affected their operations.

Table 9.2: Perceptions of Effect of Policies on Fishery Activities:

Category of Operator	Policy Affecting Work						
	Yes			No			Total
	Number	Percentage	Number	Percentage	Number	Percentage	
Fishing	391	57.2	292	42.8	683	100	
Fish Processing	53	42.7	71	57.3	124	100	
Fish Trade	304	55.0	249	45.0	553	100	

Source: Survey Data

Respondents who said their activities were affected were asked to name the policies they thought affected their work. The results are presented in Table 9.3. The table shows that for all categories of fishery operators, they were affected most by the liberalisation policy, except the factory agents who considered investment promotion policy to have the greatest effect to their work. These results could be explained in that liberalisation affected both availability of inputs and market for output to the operators. For the factory agents, however, investment promotion policy led to establishment of the processing plants, creating business for them.

Respondents were asked to rate the effect of policies on the main types of advantages to fishery activities, using the one-to-ten scale. The mean for each advantage was computed and the results are presented in Table 9.4.

The results in Table 9.4. showed highest ratings by all categories of fishery operators for “Higher Prices”, tending to support the view that the policies resulted in higher fish prices to the fishery operators.

Table 9.3: Policies Perceived to Affect Fishery Activities (%):

Category	Investment Promotion	Liberalisation	Privatisation	Decentralisation	Other Policies	Total
Fishing	33.3	37.7	5.1	22.1	1.8	100
Factory Agent	57.1	28.6	--	14.3	--	100
Fish Processing	25.9	44.4	3.7	24.1	1.9	100
Fish Trade	23.2	38.7	6.0	29.8	2.3	100

Source: Survey Data

Table 9.4: Ratings of Policy Effects on Fishery Activities:

	Higher Catch	Bigger Sized Fish	Higher Prices	Lower Costs	Other Effects
Fishing	5.3	5.9	6.8	5.7	4.9
Factory Agent	--	--	6.5	--	7.0
Fish Processing	3.5	5.9	6.6	4.7	6.3
Fish Trade	4.3	5.4	5.8	6.2	4.7

Source: Survey Data

9.3 Effects of the Fish Market

Crutchfield (1958) conducted the pioneer study of Uganda's fish trade during the late 1950s, prior to which there were only pieces of records and information on various aspects of trade on Lake Victoria mainly with the Fisheries Department. Subsequently, other studies and reviews were carried out, notably that by the Tropical Development and Research Institute (TDRI 1984) and a second by a team of experts from the Government of the Republic of China in 1986. Among the recent studies was the survey by AFRP and UFFRO (1990). At about the same time, a regional study on Lake Victoria covering Uganda, Kenya and Tanzania was examining the impact of the proliferation of *L. niloticus* on the fishing industry in the region (Reynolds and Greboval 1988). The information was further up-dated and strengthened under the FAO/UNDP Fisheries Statistics and Information Systems (FISHIN) Project market survey (Kirema-Mukasa and Reynolds 1991). The survey, which covered Lakes Victoria, George and Edward, examined the marketing activities and highlighted the complexity created by the wide assortment of products traded; the large number of traders and processors involved and the combination of the formal and informal supply arrangements in operation. In the mid-1990s, the findings were further updated by FCSEP (1997) which undertook a nation-wide survey covering marketing, together with the other fisheries sector components of production, processing and consumption. The project was aimed at undertaking a diagnostic study of the fisheries sector components with a view to identifying the constraints to sector performance, based on selected criteria. The objectives of the marketing component were:

- i) to identify categories within the fish marketing group and areas where they operated;
- ii) to assess resources, facilities and technology available to the group;
- iii) to study the institutional and organisational set up;
- iv) to assess the existing status of the fish marketing component;
- v) to study the group's relations with other groups and its influences on them and,

vi) to investigate the constraints within the marketing component.

Some of the key findings included the highly informal private sector characteristic of fish marketing, with weak organisational or institutional framework. There was lack of prosperity among the marketing operators, attributed to constraints in transportation, taxation, storage, lack of capital and lack of business management skills. The study recommended establishment of a credit scheme to assist traders; training in business management; co-operative group administration and provision of extension services covering proper fish handling during the whole process of fish marketing to reduce post-harvest losses. Concerning transportation, the study recommended improvement in access roads as well as provision of specialised trucks with chill storage for their use. A review of the taxation policy was also suggested, with a view to reducing the number as well as the rates of taxes paid along the fish distribution chain. Finally, it recommended further studies on fish marketing, particularly to investigate the traders' profit-volume relationships and how they could be improved to make the occupation more viable.

In a later study, SEDAWOG (1999a) undertook a regional survey of fish marketing on Lake Victoria, covering Uganda, Kenya and Tanzania. There were four parts to the study, namely the survey of fish consumers, traders and processors, industrial processors and fishers. The survey of fish traders and processors was carried out with the objectives of:

- i) identifying and describing the people involved in the fish trade and processing industry;
- ii) investigating the impact of the export market upon the domestic fish trade;
- iii) examining the participation of women in the fish trade and
- iv) examining the structure and organisation of the fish trade.

The study confirmed that most of the issues that had been raised by earlier studies affecting fish trade were still relevant, namely: supply fluctuations, product spoilage, inadequate business knowledge among traders and lack of financial resources.

The analysis in Chapter Five showed that many of the operators involved in all the marketing functions, namely fishing, processing and trading were poor people. In this section, the aspects of marketing that have contributed to the poverty are identified and strategies to address them proposed. The structure of domestic fish marketing is depicted in Figure 4.1 above. The main feature is that it is based on artisanal operators. During the survey a wide range of traders were met at the landing sites and market centres, involved in the fish marketing. They included factory agents supplying *L. niloticus* to the filleting plants and those dealing in *R. argentea* for the feed mills. In some cases, the factories themselves were present at the landing sites, as their staff came with their trucks and bought fish directly from the fishers. There were also bicycle and motorcycle traders who bought fresh fish and sold at the inland markets. A few traders operated right at the landing site, buying and selling in the same place, either fresh or after some processing. Two categories of truck traders were found, namely those who sold at inland but internal markets and those who exported the fish, usually processed, to the other countries in the region, namely Kenya, Rwanda and the Democratic Republic of Congo.

As part of the research, the socio-economic characteristics of the marketing operators were examined and Table 9.5 presents a summary of the distribution of traders in the sample by sex, age and educational level. The sample size was 561 respondents.

Table 9.5: Sex, Age and Educational Level Distribution of Traders in the Survey Sample (%):

Type of Traders N=561	Sex		Age			Education				
	Male	Female	Below 18	18 to 35	Above 35	No Schooling	Primary	Secondary	Tertiary	Others
Factory Agents- <i>L. niloticus</i>	33.3	66.7	--	33.3	66.7	--	66.7	33.3	--	--
Factory Agents- <i>R. argentea</i>	80.0	20.0	--	80.0	20.0	20.0	40.0	40.0	--	--
Motorcycle/Bicycle Traders	90.3	9.7	1.3	72.7	26.0	9.8	71.2	19.0	--	--
Landing –Side Traders	67.3	32.7	2.0	64.7	33.3	12.7	49.1	32.7	3.6	1.8
Truck Traders-Domestic	76.0	24.0	--	64.0	36.0	8.0	68.0	24.0	--	--
Truck Traders-Regional	100.0	-	--	33.3	66.7	--		100.0	--	--
Boat Traders	61.2	38.8	--	61.2	38.8	5.9	67.1	27.1	--	--
Market Traders	47.4	52.6	.9	61.1	38.1	9.3	62.6	26.0	1.8	.4
All Traders	64.9	35.1	.9	64.7	34.4	9.2	64.1	25.3	1.1	.4

Source: Survey Data

The sex distribution of the respondents is presented in Table 9.5 and it shows that overall, there were more males (65.9%) than females (35.1%). Among the market traders, however, there were more women than men. The higher proportion of women among factory agents for *L. niloticus* should be viewed with caution because the sample was small, only seven respondents, as there was a ban on fish export to the EU market during the survey period. Generally, there was some participation by the women in most of the trading activities. This was important given that women were among categories of the poor in the fisheries and needed opportunities to earn incomes.

The age distribution of traders is presented in Table 9.5 which shows that most traders were within the economically active age brackets of 18 to 35, which was a positive factor for their productivity. The largest proportion of the middle-aged traders were trading in *R. argentea* (80%), presumably because it was a new kind of industry with methods that were not familiar to the older people. The large number of the same age group as Bicycle traders (72.7%) could be explained in the nature of their job, which required much energy and stamina. The elderly people were the majority among Factory Agents - *L. niloticus* (66.7%) and Truck Traders – Regional (66.7%). This was because these were large-scale operations which required more capital and experience for the necessary management, both resources not so easily found among the middle-aged traders. There was little ownership of the trading units among the very young people, mainly because of the growing pressure on them not to be found at the landing sites but to go to school.

The level of education among fish trades is also presented in Table 9.5. The general pattern observed in the fisheries was also here, where primary school education was the dominant level in fish marketing. The proportions within secondary education were small but the positive thing about it was that it was evenly spread out across the different categories of traders, with the Truck Traders - regional reporting complete secondary education coverage among their members. Education was important for successful business management in fish marketing. It enabled one to maintain books of accounts and make use of written information. It was also the key to technological development.

The number of years in fish trading was also inquired into and the responses summarised in Table 9.6. According to the data, the majority of traders had been in fish trade for less than five years (43.9%). Some of the categories where the majority had only been there for less than five years were Factory Agents – *R. argentea*, Bicycle Traders and Boat Traders. All Factory Agents - *L. niloticus* had been involved for five to ten years, although, as said earlier, the sample was small. The categories where the ‘Over 10’ were the largest proportions were the Truck Traders – regional and the Truck Traders - domestic.

Table 9.6: Distribution of Fish Traders by Number of Years in Trade (%):

Type of Traders	Below 5 Years	5 to 10 Years	Over 10 Years	Total
Factory Agents- <i>L. niloticus</i>	0.0	100.0	0.0	100
Factory Agents- <i>R. argentea</i>	60.0	40.0	0.0	100
Bicycle Traders	48.4	41.8	9.8	100
Landing -side Traders	44.4	44.4	11.2	100
Truck Traders-domestic	28.0	36.0	36.0	100
Truck Traders-regional	0.0	33.3	66.7	100
Boat Traders	48.8	40.5	10.7	100
Market Traders	41.3	41.7	17.0	100
All Traders	43.9	41.7	14.4	100

Source: Survey Data

Respondents involved in fishing were asked to indicate to whom they sold their catch. The results are summarised in Table 9.7. The table shows that most respondents (53.4%) sold their catch to bicycle traders, followed by factory agents (17.1%). Boat traders were also significant because of the large catch from the islands, which they were involved in delivering to the mainland.

Table 9.7: Reported Main Buyers from the Fishers at Landing Sites:

Type of Trader	No. of Respondents	Percentage
Factory Agents	118	17.1
Bicycle Traders	369	53.4
Resident Traders/Processors	51	7.4
Truck Traders-Domestic	22	3.2
Truck Traders-Regional	13	1.9
Boat Traders	94	13.6
Motorcycle Traders	16	2.3
Others	8	1.1
Total	691	100

Source: Survey Data

The dominance of the bicycle traders as the main buyers at the landing sites means that it is a market of small scale operations, serving widely scattered small consumers best served by bicycle. The marketing is labour-intensive, and the bicycle is a main form of transport in Uganda. The existence of truck dealers shows that there is an element of wholesale trade on the market. The presence of boat traders is an indication that part of the catch originates from fishing from the islands.

Table 9.8 Trading Assets Owned by Fish Traders:

Equipment	Mean Number	Mean Cost (UShs)
Weighing Scales	1.2	58,705
Heavy Trucks	2.0	24,053,333
Pick-ups (light)	1.0	5,000,000
Motorcycles	1.0	867,000
Transport Boat	1.0	383,333
Bicycles	1.0	57,505
Boxes/baskets	1.5	5,479
Platforms	1.0	71,991

Source: Survey Data

Table 9.8 shows that the marketing involves a small range of equipment. The average number of equipment is also small and their values are not high, except for the vehicles. Trucks refer to heavy vehicles with carrying capacities of five tonnes and above while the pick-ups are of below five tonnes. The platforms are used for display of fish during selling.

An indication of the volume of business is given by the mean weekly quantities of fish traded per week as presented in Table 9.9 below.

Table 9.9 Weekly Mean Quantities of Fish Traded and Prices:

Species	Quantities handled (kg)	Buying Price (UShs/kg)	Selling Price (UShs/kg)
<i>L. niloticus</i>	183	808	1,227
<i>O. niloticus</i>	137	821	1,215
<i>R. argentea</i>	90	432	657

Source: Survey Data

It was also reported that most traders operated individually, except for the truck domestic traders and boat traders who teamed up on average into groups of 3 and 4.7 persons respectively, mainly for the purpose of hiring one vehicle or boat to carry their consignments.

To gain an appreciation of the employment levels provided by the traders, respondents were asked how many people they hired and how much they paid them per week. Similar information was obtained on family members deployed within the activities. The data, presented in Table 9.10, show that the truck traders, regional market hired the largest number of workers (9), followed by the factory agents for *L. niloticus*. The labour was required for bulking and packing supplies as both categories were large-scale operators, compared to the others. Concerning the use of family members, boat traders involved them most (2 on average) while on some of the other activities they were not involved at all.

Table 9.10: Hired and Family Labour and Weekly Payments by Type of Fish Trader:

Type of Trader	Hired Labourers		Family Members Used	
	Mean Number	Weekly Payments (UShs)	Mean Number	Weekly Payment (UShs)
Factory Agent- <i>L. niloticus</i>	4.0	19,000	--	--
Factory Agent- <i>R. argentea</i>	3.0	7,000	--	--
Bicycle Trader	1.4	4,545	1.0	.
Landing -side Trader	2.3	24,444	1.3	10,000
Truck Trader-Domestic	3.5	27,900	--	--
Truck Trader-Regional	9.0	25,000	1.0	15,000
Boat Trader	2.1	24,238	2.0	20,500
Market Trader	1.5	8,269	1.0	13,166

Source: Survey Data

Some of the consumables used in fish trade included fuel, ice, wrapping materials and preservatives. Asked to rate the availability and cost of the items, the cost of fuel and ice were rated poorly, implying that traders regarded them as constraints to their operations.

Respondents were asked to indicate the level of activities during the different months of the year, using a one-to-ten rating-scale. The results are presented in Table 9.11 and they show a stable but barely satisfactory level of operations during most months of the year, except January and February, when the activities fell below the satisfactory level. Satisfaction of a trader depends not just on supply availability but also on buying and selling prices. When a trader expresses satisfaction, he/she has balanced a number of considerations to arrive at that assessment. Table 9.11 should, therefore, not be seen to reflect just any one of the marketing factors but a combination of them.

Table 9.11: Rating of Marketing Activities by Month:

Month	J	F	M	A	M	J	J	A	S	O	N	D
Level	4.8	4.9	5.1	5.4	5.2	5.1	5.1	5.5	5.7	5.7	5.6	5.5

Source: Survey Data

Having obtained an overview of the operators and their activities in marketing, the plan of the research was to move away from the general line of a marketing survey and explore the specific aspects that had bearing on the poverty of the groups involved. The role of marketing in poverty alleviation is to enable the producers to realise the highest net earnings from their production and consumers to obtain the product at the lowest possible prices. The ideal situation for the full realisation of this would be under perfect competition, a situation that did not exist in the market of most real world commodities.

The research examined the functioning of the fish market from the perspective of the fish producers and identified important factors that limited the ability of the fishers to realise earnings from their catch. The first problem was associated with access to market. The problems of infrastructure, physical isolation of landing sites and poor preservation have been widely reported in the literature on fish marketing (EPRC 1999, FCSEP 1997, Kirema-Mukaa and Reynolds 1991, Masette 2000, MFPED 2000, Odongkara 1992, SEDAWOG 1999). According to Table 7.9 above, only 23 percent of the landing sites on Lake Victoria, Uganda had all weather access roads and the availability of preservation and storage facilities was even much less than that. At those landing sites that had all-weather access roads, there was almost assured market and good prices for catch because of the large number and variety of buyers who could get there. However, the situation was different at the majority of the other sites. The research examined the situation and how the marketing process worked for the fishers operating at the several landing sites without the infrastructure and facilities. First, the number of buyers getting to those places was limited and fluctuated from day to day, depending on weather, arrival of a truck or transport

boat to the landing site and other factors. Consequently, the fishers had a constant problem of finding buyers for the catch. At most of the landing sites on the islands, they hardly saw the buyers for their catch. The consignments were handed to the collecting boat transporter, known as 'kinala', tagged and often noted in some kind of poor record. The 'kinala' operator would go and sell them and return the proceeds to the owners on his next visit to the landing site, receiving a commission for the service. In the process, the owners had no control over the selling process and were often cheated. Consignments frequently got mixed up between owners due to the poor recording system. Sometimes, 'kinala' operators took days to come back to the landing site, resulting in a large gap in time between production and receipt of income. During the research, several cases of outright non-return of payment for consignments were heard. Even when the traders came directly to the landing sites, a common complaint was on the setting of prices by the buyer. The result was that the fishers received prices so low that "they did not reflect the resources and efforts put into fishing" (Kamuturaki pers. com. 1999). Other fishers referred to them as "throw away" prices. This was attributed to isolation and perishability of the fish, with not enough provisions to address the limitations. Lack of organisation among fishers further weakened their position on the market. Table 9.12 gives the prices for fresh *L. niloticus* at selected accessible and isolated landing sites in Mpigi District.

Table 9.12: Fresh *L. niloticus* Prices at Selected Landing Sites in Mpigi District, (UShs/kg):

Accessible Landing Sites			Isolated Landing Sites		
Busabala	Nangombe	Nakabugo	Kagulube	Bwerenge	Kachanga
850	600	641	450	433	420

Source: Survey Data

The table shows that wide price variations could exist within one district, depending on the situation at the landing sites. Inability of fishers to realise

prices that reflected resources and effort put into fishing, affected earnings and perpetuated poverty among the fishers. The frequent failure by the 'kina' operators to deliver payment for consignments dispatched through them is a source of risk within which the fishers have to operate. The lack of voice in the setting of price for their catch was an indication of the insecurity of their position in the industry. Three dimensions of poverty, namely low earnings, risk and insecurity for the fishers were, therefore, perpetuated by the marketing system.

The effect of the marketing system was also examined from the standpoint of the traders, many of whom had been identified to be in poverty groups, as reported in Chapter Five. Fish traders expressed concern about inadequate fish supply as a major constraint in their operations. However, SEDAWOG (1999) reported that incomes of traders and processors increased due to both high catches and low catches as follows: "In the latter case, traders' incomes peaked because they had plenty of fish to sell, while in the former they peaked because there was little fish and they were able to obtain higher prices per unit" (SEDAWOG 1999 p. 59). This presented a risk in the situation within which the fish traders had to operate. Another threat encountered was with respect to fish prices. Although traders were reported to set buying prices at the isolated landing sites, the conditions were often too difficult to allow them to reach those places, so they operated from the accessible landing sites where most other categories of fish traders went. Because these landing sites were few, not only was there high competition for fish among the artisanal traders but the fish factories and their agents offered the fishers high prices to win the supply and artisanal traders had no alternative but to follow. A high cost situation, therefore, prevailed in the supply market for the traders, with the effect of diminishing earnings from their trading operations. At the destination market, on the other hand, traders faced prospects of low selling prices. A trader would have to sell at a low price if he/she arrived at the market late when the customers had bought from the early traders or if the market was 'full with fish' as a result of good catches. Lack of information flow has been a limitation but with the extension of the mobile phone services into the rural areas, this was expected to improve. Poverty among consumers was continuously mentioned as a factor in the low selling prices on the domestic market. It also affected quantities of fish a market could absorb, as consumers

could not afford fish on a daily basis. The trader was also faced with the threat of product loss¹. Much of the losses were born by the traders. During the research, reports of deteriorated as well as broken fish pieces were made, resulting in losses to traders. Like producers, fish traders also had their share of non-payment for delivery. Because of the difficult market situation, large traders often gave out part of their commodity to other traders for sale at smaller markets, but not all the returns were satisfactory. Some factory agents made deliveries to factories but were unable to obtain payment. At the time of the research, most fish factories were operating at very low capacity due to the ban of Lake Victoria fish into the EU market. Many traders who had made deliveries to the factories were not paid, supposedly because of the ban. The issue of non-payment for fish delivery is discussed further, later in this chapter.

Traders were also concerned about the high taxation on fish trade at landing sites, on the route and at markets that reduced the traders' profits. Insufficient knowledge, including lack of business language, to effectively carry out the managerial, accounting and budgeting functions required in the increasingly complex fish trade was a limitation, attributed to the low level of education and training. Funding was said to be inadequate, as there was lack of credit to start and run the fishery business. In conclusion, therefore, fish traders were faced with poverty due to losses resulting from fish supply, the competitive buying prices and the low selling prices to consumers and losses associated with product quality. This was aggravated by the insufficiency of trading requirements namely information, knowledge, equipment and finance. Consumption poverty as well as risk to their operations resulted from the conditions on the fish market.

The limitations identified in the analysis above can be grouped into two related categories, namely the physical and market constraints. The former include fish catches, infrastructure, services and product quality while under the latter, the issue of competition and methods of pricing are considered. The way forward for the market mechanism as a poverty factor in fisheries would be to address both categories of constraints.

Government's policies for improving the fish market were examined. The National Fisheries Policy deals with two areas closely related to the constraints

¹ See discussion of post-harvest fish losses undertaken in Chapter 7

discussed here, namely the policy on fish utilisation and that on fish trade (MAAIF 2000 p. 14). The fish utilisation policy is to ensure safety, quality and wholesomeness of fish and fishery products before placement in both domestic and foreign markets. The objectives are to improve utilisation of fish catch and reduce post-harvest losses and to safeguard fish food quality for domestic and foreign consumers to meet the growing expectations regarding quality of fish and other fisheries products. The proposed strategies include strengthening institutions for quality control; improving quality control in processing establishments by enforcing the code for Good Manufacturing Practices (GMP); adoption of quality assurance systems based on Hazard Analysis of Critical Control Points (HACCP) and Total Quality Management (TQM); ensuring proper fish handling, transportation, distribution and marketing systems in Uganda. Other elements of the strategy include improvement in infrastructure, technology and incentives, particularly at landing sites; encouraging suitable boat designs with hygiene and use of ice and avoiding of contamination of fish before and after harvest. Basically, the policy addresses the problem of fish quality and post-harvest losses. The fish trade policy is to encourage a wide range of pre-packed value added fishery products for more competitive marketing. The objectives are to increase the market share of a variety of species for exports and to reduce fish imports by availing competitive value added local products to domestic consumers. The strategies include culture of high value species for export; removal of price distortions on the fish export-import trade; diversification of fish product range; encouraging development of pre-packed fish products; creating information mechanisms covering the international trade in fish; research and promotion of under-utilised species; formation of fishers' marketing organisations and encouraging training of fishermen in business skills.

These policies could be relevant but they could face the problems of targeting and feasibility. First, the focus of the policies is more towards the external sector, seeking to increase exports and minimise imports so as to maximise net foreign exchange earnings. With such a focus, the poor are likely to be sidelined, since they have limited role in the global fisheries market. Secondly, resource constraints would dictate that priority areas be identified for the public investments. At the time of the research, there was discussion about improving

eight landing sites on the lake (New Vision newspaper, 18 April, 2001). However, there was the problem of securing the funds for all of them, so only four were being tendered for construction, under Japanese Grant Aid. Even if the plan was achieved, the mechanisms through which the large number of poor fishery operators would be brought to benefit from such a limited program are not well defined within the policy. Concerning the imperfect market mechanism, the policies will address price distortions relating to the external fish trade but no suggestions are made to improve the market mechanism on the local market. Furthermore, the marketing constraints highlighted in the analysis go beyond the fisheries arena, requiring higher level and intersectoral measures. It is however, not clearly provided for in the policies how this would be achieved.

9.4 Financing for Fishery Activities

The issue of investment resources and financial services was considered important in understanding the causes of poverty. Funds were required to meet the initial capital expenditure as well as the operating costs of operations. Experiences from the more successful parts of the developing world had shown that financing proved an important tool in engaging the poor in economically productive activities, leading to progress in poverty alleviation and promotion of broad-based growth. The survey, therefore, examined the financial situation in the fisheries with a view to assessing its role as a factor in poverty. In order to identify the sources of finance in the fishery activities, respondents were asked how they raised capital to begin their operations. The responses are summarised in Table 9.13. The results showed that for all categories of operators, the majority used their own savings as starting capital.

Respondents were further asked how they shared out the responsibility for operating costs with the labourers. The responses are presented in Table 9.14. In all the categories of operators, the majority met their operating costs.

Table 9.13: Sources of Capital for Fishery Operations (%):

	Owner's Savings	Loan from Fish Traders	Loan from Credit Institutions	Family Capital	Other	Total
Fishing	89.6	1.0	0.8	5.2	3.4	100
Factory Agent	71.4	14.3	0.0	0.0	14.3	100
Fish Processing	78.5	4.0	1.6	12.7	3.2	100
Fish Trade	79.7	4.2	1.5	11.2	3.4	100

Source: Survey Data

Table 9.14: How Operating Costs are Shared Between Owner and Labourers (%):

	Met by Owner	Family Capital	Met by Owner, except Food for Labourers	Shared between Owner and Labourers	Others	Total
Fishing	90.5	0.8	1.1	6.8	0.8	100
Factory Agent	85.7	0.0	0.0	14.3	0.0	100
Fish Processing	91.8	3.1	1.0	1.0	3.1	100
Fish Trade	94.3	3.7	1.1	0.7	0.2	100

Source: Survey Data

Respondents were also asked how they shared out the revenues between owner and labourers. The responses are summarised in Table 9.15. The results showed that in fishing, the majority shared out revenues after sale of catch. There were also cases where the owners paid fixed wages to their labourers. A considerable proportion (35.2%), however, did not share their revenues, as they worked for themselves without involving external labour. Similarly, among the other categories of operators, the majority worked for themselves and only smaller proportions shared their revenues with labourers whom they paid fixed wages.

The information from Tables 9.13, 9.14 and 9.15 indicates that the fishery units were primarily sole proprietorship, where the owners individually held the responsibility for their funding, from own savings and took the risk involved. The disadvantages associated with sole proprietorship could, therefore, be expected in the fisheries, notably limited capital and discontinuity of business once the owner died. This type of business organisation did not favour growth and its widespread occurrence in the fisheries was expected to contribute to the poverty.

Following from there, the research inquired into how respondents utilised their earnings from fish work. Respondents were asked to give up to two most important uses. The responses were analysed using a Multiple Response Frequency analysis and the results presented in Table 9.16.

Table 9.15: How Revenues are Shared Between Owner and Labourer (%):

	Shared in Agreed Proportions	Labourers Paid Fixed Rates	Sharing of Catch Before Sale	Not Shared	Total
Fishing	53.5	8.7	2.6	35.20	100
Factory Agent	16.7	0.0	0.0	83.3	100
Fish Processing	29.7	14.9	0.0	55.4	100
Fish Trade	10.2	8.7	0.3	80.8	100

Source: Survey Data

Table 9.16: Utilisation of Earnings from Fish Work (%).

	Maintain Household and Pay Fees	Re-Invest in Fisheries	Invest Elsewhere	Buy Assets	Others	Total
Fishing	54.0	29.1	10.4	5.4	1.1	100
Factory Agent	57.1	21.4	14.3	7.2	0.0	100
Fish Processing	63.4	26.3	6.5	3.8	0.0	100
Fish Trade	64.1	21.6	7.9	6.2	0.2	100
All Respondents	58.6	26.0	9.2	5.6	0.6	100

Source: Survey Data

Table 9.16 shows that for all categories of operators, more of the earnings went into consumption, namely for maintaining the household and paying school fees. Fish traders and processors spent greater proportions on consumption than fishers and factory agents. Concerning investments, all categories re-invested more in fishery activities than elsewhere, with fishers re-investing highest proportion of earnings in the fishery, followed by processors. SEDAWOG (1999b) reported a similar finding from a regional survey of the three countries on Lake Victoria. Factory agents invested highest proportion elsewhere, followed by the fishers. All categories also spent part of their earnings on acquiring assets, with factory agents spending highest proportion, followed by the traders. Accumulation of assets was important because in time of need, they could be converted into cash, depending on the nature of the assets.

Respondents were, therefore, asked what assets they owned and the information summarised in Table 9.17. The table shows that generally, the operators owned few items of wealth, both in mean numbers and values. They were not really rich by any standards. However, Table 9.17 shows that most respondents had used their money to acquire permanent assets, namely houses and land. These assets would not be easy to convert to cash, if an operator wanted to expand his/her activities. Furthermore, they would not help in securing a loan because they would have low value due to their location in the rural areas. Although the fishery operators have put effort in obtaining some assets, the assets would not help to improve their financial base for business. This is, however, not to imply that the assets were totally worthless. Within the Ugandan societies, ownership of a permanent house and land is greatly valued. However, from the point of view of financing for the business, they would not be of much assistance because of the problem of convertibility into cash.

Table 9.17: Mean Number and Value of Wealth Items Owned by Fishery Operators:

	Iron Roof House		Land		Vehicle		Motorcycle	
	No.	Value	Acre	Value	No.	Value	No.	Value
Fishing	0.4	1,015,987	1.5	686,299	0.0	92,757	0.0	8,871
Factory Agent	0.1	71,429	1.7	785,714	0.0	0	0.1	142,857
Fish Processing	0.3	441,260	0.5	177,283	0.0	0	0.0	5,276
Fish Trade	0.2	430,750	0.8	345,670	0.0	228,179	0.0	4,982
All	0.3	723,781	1.1	503,586	0.0	138,242	0.0	7,654

Table 9.17 (cont.)

	Bicycle		Cattle		Goat		Radio	
	No.	Value	No.	Value	No.	Value	No.	Value
Fishing	0.4	31,131	0.7	91,217	1.0	17,182	0.5	30,152
Factory Agent	0.3	14,286	0.3	35,714	0.0	0	0.7	40,714
Fish Processing	0.1	5,858	0.4	54,551	0.5	7,795	0.4	20,236
Fish Trade	0.3	18,554	0.2	47,741	0.3	5,088	0.5	23,324
All	0.3	23,692	0.5	70,133	0.7	11,382	0.5	26,559

Source: Survey Data

Access to credit among the operators was investigated. Respondents were asked to indicate if they had obtained any credit for their activities over the last three years. The responses were summarised in Table 9.18.

Table 9.18: Respondents Who Received Credit Over the Last Three Years (%):

Category	Yes	No	Total
Fishing	18.5	81.5	100
Factory Agent	57.1	42.9	100
Fish Processing	15.4	84.6	100
Fish Trade	15.4	84.6	100
All Categories	17.2	82.8	100

Source: Survey Data

Among most categories, the majority of operators did not receive any credit over the last three years, except for the factory agents where some 57.1% did receive credit. On further probing, it was established that much of their credit came from the fish factories, which advanced them cash to purchase fish and supply to them. During the research, the need for capital was expressed and the lack of sources of finance was identified as a constraint that hindered the development of the units. There was also general lack of financial services to the fishing communities. Notably, there were no facilities for operators to save their money on a bank account, leading to loss of opportunity to earn interest on unused cash. Respondents expressed concern about lack of safe custody for their cash, leading to frequent theft of cash within the landing sites. As a result, many people moved around with all their money all the time, which was equally risky. There were no facilities for transferring cash from one point to another and as a result, there were reports of thieves hiding in the forests on the route to the landing sites and robbing fish traders of cash meant for buying fish. It was also clear that cash from the fisheries was not mobilised into a form that could be circulated for productive purposes, through loans. There was also lack of insurance arrangements to safeguard against the various forms of risks related to the fishery

operations. Financial limitations could, therefore, be said to have exacerbated the poverty among the fishing communities by limiting production as well as causing considerable risk among them.

Opportunities within Uganda's financial system for improving the financial position of fishery operators were examined. A general situation of the rural financial system was described under PMA as being "largely undeveloped, fragmented and not integrated into the formal financial sector and operates in an environment faced with many daunting challenges" (MAAIF and MFPED 2000 p. 70). Two types of financial services were operating in Uganda. The first was the formal financial sector, comprising of 17 commercial banks, three development banks and eight credit institutions. All these banks had their headquarters in Kampala and except for the Uganda Commercial Bank (UCB) and, to a lesser extent, the Centenary Rural Development Bank (CERUDEB), they did not have adequate network of branches in the rural areas to effectively serve the communities. Furthermore, their loans were considered un-accessible to fishery operators due to lack of collateral and because fishery activities were regarded as being 'too risky'. All the development banks, credit institutions and insurance companies were also based in Kampala, with limited operations in the rural areas. In 1998/99, Uganda went through a financial crisis, which saw the closing down of three commercial banks, namely the International Credit Bank, the Co-operative Bank and the Trust Bank, with many others having to undertake improvements before they could be allowed to continue. The crises were precipitated by, among other causes, inadequate capitalisation of the banks, excessive 'insider lending' whereby the banks would lend to members of management, board and other related individuals with no interest charges or sureties and many of them failed to repay. Supervision by Bank of Uganda, the central bank, was also said to be unsatisfactory.

The second category within the financial system consists of the Micro-Finance Institutions (MFI), also known as Community-Based Organisations (CBO) or Rural Financial Intermediaries (RFI). These were said to have emerged within the last 10 to 15 years to fill the gap created by the absence of full banking services in most parts of the country and to provide services needed by the poor but could not be accessed from the commercial banks (MAAIF and MFPED

2000 p. 70). Many of the RFIs were foreign in origin and operated with donor funds. However, there were also Government projects involved in provision of credit, namely the Poverty Alleviation Project (PAP), 'Entandikwa' and the Private Sector Development Program (PSDP).

Of the three Government credit schemes, 'entandikwa' was the most publicised because it was nation-wide and involved local funds. Members of the fishing communities also expressed much frustration with it. The scheme was introduced by Government, in conjunction with the World Bank, in 1994/95 financial year with the aim of alleviating poverty and other social costs arising from implementation of the Structural Adjustment Programme. It was to target the vulnerable groups who had no access to the formal bank credits. This was because they were either far from the bank branches, lacked collateral to obtain the bank loans or were confronted with other institutional obstacles which hindered them from accessing the formal credits. The scheme would provide them with funds to start small enterprises for generating incomes. The amounts released were US\$ 4,492 million, 2,932 million and 2,500 million in 1994/94, 1995/96 and 1996/97 financial years respectively and these funds were expected to be recycled in the subsequent years. The sums were distributed to the 214 counties in the country, to be managed by County Steering Committees (CSC). In order to obtain credit under the scheme, the targeted poor were to perceive small productive ventures either individually or as a small group of persons and submit a filled application form. The form would be endorsed by the chairpersons of the Village, Parish and County Councils. It was reported that the scheme had been fraught with challenges and the results had largely been disappointing (MAAIF and MFPED 2000 p. 67). Muhumuza (1998) associated the failures in 'entandikwa' with its implementation as a state-managed credit scheme. While there were merits in state-managed programmes for alleviating poverty by promoting and strengthening the productive capacity of micro-enterprises, generating savings for future investment and promoting institution building at the grassroots, experience had shown that they performed poorly due to their method of implementation. He concluded that 'entandikwa' had been politically implemented, with the reality that it was the councillors, their relatives, friends and the elite that continued to benefit, contrary to the targeted

group. There was also lack of feasibility studies carried out to identify the real poor and their needs, upon which the scheme would have been formulated. No processes of consultation and mobilisation were carried out to obtain the input of the poor and it remained a top-down scheme. Interest rate of 16% charged on the credit was considered too high for poor persons just starting their enterprises and it was almost comparable with bank lending rates of 20 to 25% per annum. The design of the scheme was such that recovery began after a grace period of three months, the full loan to be repaid in twelve months. This was considered too short for most investments to take root. There was also no mechanism for monitoring how the credits were used and as a result, the funds ended up in expenditures that were unrelated to any generation of income. The intermediary agencies formed to ensure effective implementation of the scheme lacked accountability, capacity and experience with such responsibilities and there were suggestions that the existing rural financial institutions could have used their experience and network to do a better job. There was a high rate of defaulting on the loans, resulting from a combination of the weaknesses described above. Under the heading 'Poor Loan Recovery Increased Poverty,' *The New Vision* Newspaper reported: "The LC3 chairman Rubaga Division, Mr. Justin Sendikaddiwa, has said poor loan recovery under the 'entandikwa' loan scheme has frustrated Government's effort to eradicate poverty. Government should provide clear guidelines to lower councils on how to treat 'entandikwa' defaulters. ... of the 250 people who applied for the funds in 2000, only 13 had paid. 'I have a long list of these defaulters and we are ready to expose them after which we shall send the list to the 'Entandikwa' Secretariat for action,' he said" (*The New Vision*: June 6, 2001). The access of credit under the scheme to the fishery operators was reported to be equally limited. MFPED (2000d) outlined the weaknesses in the scheme as perceived by the fishing communities. The credits were awarded to the rich rather than the poor. Amounts granted were also much less than those requested in accordance with the business plans. The result was that borrowers ended up putting the money in other unplanned businesses in which they did not have adequate knowledge and subsequently failed to repay the loans. The timing of the loans was also said to be unsuitable and there was inadequate sensitisation to the beneficiaries on how best to use the funds. The

implementing agencies did not make any follow-up to guide the progress of the activities.

The National Fisheries Policy funding provision is concerned with sustainable funding for public sector activities. The policy is to identify and implement sustainable funding mechanisms for improved fisheries management, research and development. Its objective is to put in place direct funding mechanism to the fisheries for ensuring constant flow of funds. It is planned to accomplish this by putting in effect levy or royalty on fish exports as well as on production and local marketing. The funds would be held in trust and a percentage utilised for approved fisheries management activities. However, the policy does not address the private financial needs of the communities. At a higher level, PMA has proposed that the short-term strategy for establishing the rural financial system should be based on the MFIs because of their reported successes with the grassroots. Formal commercial banks that have undertaken lending in the rural areas would also be encouraged. The long run strategy would be to integrate MFIs with the formal financial sector, including development banks and insurance companies, in order to provide an array of services corresponding with the different needs for sustainable development (MAAIF and MFPED 2000). Other aspects of the strategies include a wide coverage of the services across the regions, high geographical density of branches for greater access to the households and training for the service providers as well as the clients. These strategies as proposed under PMA cover most of the needs for financial services by the fisheries sector as explained above, namely accessible facilities to save, borrow and keep cash. However, for the advantages to be realised, certain things need to take place. First, the attitude within MFIs and the financial sector as a whole that fisheries activities are too risky to finance would have to be addressed. In the same vein, fishery operators need to embrace the advantages of the new financial strategy through a change in attitude towards banking and release their earnings into the financial system.

9.5 Economic Factors

The understanding of the entrepreneurship status in the fisheries was one of the areas that had been given little emphasis in studies. Entrepreneurship refers to the capability of the individual to be innovative in formulating business ideas and making the best decisions that would make the business a success. It is an essential factor that drives decisions in a market oriented production system. It guides the choice of product type to produce, input combinations to minimise costs and the appropriate market to maximise revenue. In the modern business world, decisions are based on information, derived from appropriate records and other forms of data maintained on the business. The ability to maintain and process these data is, therefore, an integral part of the entrepreneurial skills of a market oriented producer. During the research, the ability of operators to maintain and utilise business data on their activities was investigated and the results summarised in Table 9.19.

Table 9.19: Respondents Who Kept Books of Account (%):

Category	Yes	No	Total
Fishing	39.7	60.3	100
Factory Agent	71.4	28.6	100
Fish Processing	39.7	60.3	100
Fish Trade	31.7	68.3	100
All Categories	36.6	63.4	100

Source: Survey Data

The data showed that in all categories, except for factory agents, the majority of the respondents did not maintain any books of accounts on their fish work. For the few who reported keeping them, further probing revealed that they kept no more than notes on their activities, using school exercise books (86.1% of all categories of respondents) and the formal ledger records were kept by only 8.0% of all categories of respondents. Among the respondents who reported that they

did not keep any records, the main reason was lack of interest in keeping them (48.0%), lack of time (20.5%) and inability to write the records (15.4%) of all categories. In the analysis, this observation on lack of interest in maintaining business records, together with earlier observations about low levels of schooling; high consumption proportions of earnings; use of stagnant technology all reflect low levels of entrepreneurship among the operators, the expected effect of which was to drive the system further into poverty.

The problem of risk was also further examined. In Chapter Five, the risk dimension of poverty was discussed and the main threats presented in Table 5.22. Data from the survey showed that when the respondents were asked what safeguards they applied in the face of the threats and risks, the majority (53.6% of all categories) applied “none”, a response that was most common for each of the individual categories of operators as well. Further risks have been revealed earlier in this chapter, covering fish prices, product deterioration and theft of cash and the lack of banking and insurance facilities to protect against some of them. To gain appreciation of the perception of the fishery operators on the risks, respondents were asked what they felt about the future of fish work. In response, they rated it barely satisfactory at 5.3 on the one-to-ten scale for all categories while factory agents rated it below satisfactory at 4.4. Asked what they based their ratings on, the majority used the reliability criterion (35.4% of all categories), implying that their interest was in a reliable source of livelihood. Apart from being a dimension of poverty in itself, the risk in its various forms was a deterrent and negatively influenced productivity and earnings in the fishery. The research examined some of the coping strategies adopted by the fishery operators. Most of the respondents (61.8%) reported having no complementary activities to their fish work. Among those who had, the majority (69.9% of all categories) were involved in farming related activities, as given in Table 9.20. The data also showed that for the men, the majority of their wives were mostly occupied with housework. Therefore, non-involvement in complementary work by most operators and pre-occupation of their wives with housework means that their coping strategies were limited and they were vulnerable in case of any episode in fishery incomes.

Table 9.20: Complementary Activities of Fishery Operators (%):

Category of Operators	Farming Related Activities	Trading in Other Goods	Providing Services	Cottage & Craft	Other Activities	Total
Fishing	59.2	20.4	9.0	4.2	7.2	100
Factory Agent	50.0	50.0	0.0	0.0	0.0	100
Fish Processing	61.1	19.4	11.1	5.6	2.8	100
Fish Trade	61.5	30.5	4.0	2.0	2.0	100
All Categories	59.9	23.4	7.7	3.6	5.4	100

Source: survey Data

To address the problem of vulnerability requires that the fishing communities should be prepared through sensitisation on the need for supplementary income activities. They should be equipped with the necessary skills, through a program involving training, extension and research and resources be availed to them through appropriate MFIs. Interventions to address the different dimensions of poverty in the fisheries would, therefore, involve fishery as well as no-fishery programs in a holistic approach to broaden the income opportunities.

In Chapter Two, the concept of externalities was introduced and a distinction made between real inter-industry externalities and pecuniary externalities (Johnston 1992). The existence of externalities would, therefore, affect the outcome of a business either directly through higher costs or indirectly via the market mechanism. As part of the study of the economic factors, the external influences of the various categories of operators on each other were investigated. An indication of the activities that had effect on the other activities is presented in Table 9.21

Table 9.21: Effects of Fishery Activities on Each Other (%):

	Fisher Effect		Processor Effect		Trader Effect		Factory Effect		Outside Effect		Fish. Ass. Effect	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Fishing	57.9	42.1	32.1	67.9	73.7	26.3	28.7	71.3	38.0	62.0	28.2	71.8
Factory Agent	83.3	16.7	57.1	42.9	100	--	57.1	42.9	71.4	28.6	66.7	33.3
Fish Processing	53.2	46.8	66.7	33.3	65.9	34.1	37.0	63.0	30.5	69.5	16.0	84.0
Fish Trade	58.7	41.3	27.5	72.5	68.1	31.9	33.8	66.2	39.1	60.9	14.3	85.7
All Categories	57.9	42.1	33.6	66.4	70.9	29.1	31.7	68.3	37.9	62.1	21.6	78.4

Source: Survey Data

Table 9.21 shows that the activities which had the highest effects on the others were fish trading (70. %) and fishing (57.9%). The full effects of fish factories was not reflected presumably because this was the time of the ban on Lake Victoria fish to the EU market. The effects of the activities on the other categories were examined. Operators involved in fishing were affected by other fishers mainly through social support for each other and when there was a common cause to work for. On the negative side, competition and conflicts were reported. These were over fishing grounds as well as in connection with buyers of fish and selling prices. The processors were perceived to provide mainly a positive effect on the fishers, through market for their catch. On the negative side, processors were seen as competitors, as they also placed the processed fish on the market, taking up a share of it. The positive effect of the fish traders on fishers was in provision of market for catch. However, traders were also viewed negatively as competitors because of the vertical integration by some of them, getting involved in fishing as well as trading. Similarly, there was a positive effect from factories as buyers of fish, although some of them were also seen as competitors because of their support to certain suppliers through credit and input provision for better fishing. Among the outsiders, farmers had the greatest effects on fishers, mainly as consumers providing market for fishers. Fishermen's organisations had the effect of providing information and, to a less extent, co-ordination of fishers.

Examination of the effects on factory agents revealed that they were affected by fishers through social support and supply of fish. However, on the negative side, there was competition from the fishers wishing to sell directly to the factories and this resulted in conflicts. Local processors and traders had the positive effect of being buyers from the factory agents for rejected fish that did not meet the factory standards. On the negative side, however, they were competitors for fish supply from the fishers. Their greatest effects from outside was from other traders who provided such supplies as fuel, cleaning and packaging materials used for fish. The service they received from fishermen's associations was in information, training and co-ordination with other players in the fisheries.

Fish processors had the positive effect of fish supply from the fishers while on the negative side, they were both competitors on the market for fish. Other fish

processors provided social support but their greatest effect was as competitors for supply and on the market for processed fish. Traders were viewed as buyers of processed fish and often as providers of social support while on the negative side, they were competitors for fresh fish supply. Fish factories did not offer much positive effect but were competitors for fish supply. From outside the fisheries, the greatest effects came from farmers, as buyers of processed fish. Fishermen's associations contributed to their work through information. On the negative side, however, their demands for financial contributions were often excessive.

Concerning the influences on fish traders, their greatest effect from fishers was in supply of fish, followed by some social support. On the negative side, mention has already been made of the competition involving traders with vertical integration. Apart from providing some social support, fish processors were mainly competitors for supply as well as for the market for fish. Similar relationships existed with the fellow fish traders. Fish factories were mainly perceived negatively as competitors, who also set fish prices too high at the landing sites. From outside the fisheries, the greatest effect came from the farmers, as buyers of fish. Fishermen's associations contributed through information and co-ordination but on the negative side, they were perceived as being exploitative and charging excessive contributions.

In summary, therefore, the main activities that have effects on the rest of the activities have been identified; the types of influences, both positive and negative have been noted and relationships between the different types of fishery activities, as well as others outside, have been observed. The negative influences were expected to increase poverty while the positive ones would help to improve the situation. There was, therefore, need to create awareness in the operators about these linkages and provide them with skills that would enable them to manage these influences in such a manner as to minimise the negative effects and promote the positive.

9.6 Conclusion

The chapter identifies links between economic policies, fish marketing, financial factors and a selection of other economic considerations with poverty.

The findings revealed that the recent economic policies under the Structural Adjustment Programmes, namely financial austerity, liberalisation, privatisation and investment promotion, may have had some positive effects like increased supply of fishing inputs on the market and higher fish prices to a section of producers. However, overall, they were considered to have had greater negative effects through rising costs in the industry; threat to resource sustainability; denial of livelihood opportunities for local middlemen and of fish supply to the low-income local consumers. Limitations within the fish marketing systems affected quantities demanded as well as fish prices, with depressing income consequences for fishers and traders alike. There were also insufficient credit and other financial services to the operators, a factor that hindered their progress. Other economic conditions were expected to increase the poverty among the fishery operators. Relevant existing policies and plans have been identified and assessed. The chapter, therefore, paves way for strengthening of the economic interventions for poverty reduction in the fisheries.

CHAPTER TEN

CONCLUSIONS AND RECOMMENDATIONS

The overall goal of the research was to contribute to the understanding that could be applied to the enhancement of the quality of life of Uganda's fishing communities of Lake Victoria. The research sought to develop a framework for analysis and intervention towards alleviation of poverty and enhancement of wealth distribution, while assessing Uganda's recent national, agricultural, fisheries sector and environmental policies and programs on Lake Victoria. This chapter provides the conclusion to the thesis. The approach has been to refer back to the research objectives once more and use them in structuring the conclusions. The chapter also provides the recommendations derived from the conclusions of the thesis.

10.1 Identification of Poverty

The first objective of the thesis was to establish the nature of poverty among the fishing communities of Lake Victoria, Uganda. The research was able to achieve this objective by identifying cases of the different forms of poverty in the fisheries. In order to do this, it was necessary to develop a suitable definition of poverty, together with the relevant indicators and measures.

The research examined the historical development of the definition of poverty as provided by the literature on the subject. The concept is reported to have evolved from the early studies in England by Booth and Rowntree on 'absolute poverty' which identified lack of material resources as the main element in poverty, limiting one's command over goods and services (Alcock 1997 p. 68). Poverty was defined in relation to a minimum package of goods and services necessary for 'subsistence'. In subsequent deliberations, the concept of 'basic needs' was developed, in recognition of the need for physical facilities of the community that provide for the social needs, namely health and education. Subsequently, concerns that social needs went beyond physical facilities of the communities and included the cost of fulfilling one's obligations to family and society led to

the emergence of the concept of 'relative poverty'. The process has continued and on this research, the broad definition of poverty, as provided by the World Bank (2001c) is adopted, including the dimensions of inadequate basic necessities, low education and health achievements, a sense of insecurity and exposure to risk.

Indicators and measures for the different dimensions of poverty were established and applied, based on the literature as well as on the perceptions of the people in fisheries. Consumption poverty was, therefore, assessed using per capita income data from national household survey and the research survey. A poverty line of US\$ 100,000 per month, used for national poverty assessments, was applied. Earnings of respondents were calculated, based on their activity data. The monthly earnings were categorised to determine the proportion of the respondents that was in the category of US\$ 100,000 or below, categorised as poor. It was found out that 47% of the respondents involved in fishing were in the category of the poor.

Achievement in education was indicated by national statistics on primary school enrolment and literacy as well as by the survey data on level of education of the fishery operators. Secondary education was adopted as the minimum level required for one to be considered educated. The data showed that some 74.5% of respondents did not reach secondary education level and were considered to be in poverty with respect to educational achievement.

Standard indicators for health achievement include infant and under-five mortality rates and life expectancy. The thesis examined existing statistics for these indicators. However, data were available only at the national level and not at the fisheries level. In the absence of statistics, the research examined the evidence on health status at the landing sites, provided through the key informant interviews and direct observations. It was reported that many people were affected by ill health and the common diseases included malaria, diarrhoea, bilharzia, typhoid and HIV/AIDS. Health services were also found to be limited, leading to greater use of private medical services, self medication and use of traditional healers. The low health achievement dimension of poverty was, therefore, identified.

A sense of insecurity was identified from reports of the different segments of the community. Job insecurity among boat labourers, nationality and ethnic discrimination and segregation based on wealth status were noted. Domestic violence and sexual abuse at landing sites were also reported. The affected persons were often unable to get justice as a result of the corruption and favouritism within some local and official institutional leadership. Segments of the communities were, therefore, enduring a sense of insecurity, an important dimension of poverty.

Lastly, state of risk was also identified within the communities. Events to which many fishery operators and labourers were vulnerable included failure of catch, theft of gear, boat and road accidents, non-payment for catch deliveries, risk of infections, failure of market or ban on fish export. These events could cause an episode in the income or health of the fishery operators.

Within the limits of the statistics available, therefore, this objective was met.

10.2 Activities Associated with Poverty

The second objective of the thesis was to identify the activities within fisheries that were associated with poverty. The research approached this objective mainly with respect to consumption poverty by providing poverty profiles for respondents involved in the different types of activities. Data collection covered three broad categories of activities as indicated in the questionnaire, namely production, processing and marketing. In order to fulfil this objective, therefore, poverty profiles were produced for operators in the three activities. The data showed that the highest proportions of respondents in poverty were within fish marketing, followed by processing and lastly, fish production. Within each activity category, there were smaller activity divisions.

Within the production category, the data were disaggregated by activities based on species of fish targeted, which revealed that fishers of *O. niloticus* had the largest proportion of their group in the poverty category (63.9%), compared to those targeting *L. niloticus* (33.2%) or *R. argentea* (39.4). Distinction was also made between fishers operating with powered and un-powered boats. The results showed higher proportion (48.4%) of non-powered boat operators in poverty

than the powered boat operators (16.0%). In fish processing, profiles were generated for people involved in smoking and sun-drying and it showed that greater proportion of those involved in sun-drying (55.0%) were in the poverty category than those in smoking (30.6%). In fish marketing, there was a similar proportion of respondents operating by bicycle (90.9%) to that of the market traders (89.6%) in the poverty category. Special attention was given to the hired labourers on boat. The proportion of labourers who were paid on a share system who were within the poverty category was 90.5% while those on flat rate was 89.9%. It was, therefore, concluded that poverty existed within all the three main activities but its extent varied from one activity to another.

With respect to educational achievement, the research provided data, which were disaggregated by category of activity of respondent. A similar pattern of education was revealed between respondents involved in production, processing and marketing (see Table 5.17). It was not possible to give similar distribution with respect to the other dimensions of poverty, namely health, sense of insecurity and state of risk. In the case of health, this was due to lack of data. For insecurity and health, there are methodological limitations to such comparisons. It is recommended that future research should study the distribution of poverty with respect to the dimensions of health, sense of insecurity and state of risk and vulnerability.

10.3 Poverty Distribution within Groups and Districts

The third research objective was to determine the distribution of poverty within the different groups of people and districts on Lake Victoria. In order to achieve this objective, the data were disaggregated by sex, tribe and district of the fishers and poverty profiles produced for each of these groups. Within the different sex categories, 46.5% of male fishers were within the poverty group while that of the females was 51.7%. With respect to tribal distribution, Basamia had the largest proportion within poverty group (72.2%) while the Baganda had the lowest (38.1%). Profiles were also produced for the tribes in between the two extremes. Regionally, Jinja district had the largest proportion of its fishers in poverty

(93.3%) while Kalangala had the smallest proportion (27.3%). Similarly, estimates for the other districts were also produced.

Educational achievements by sex, tribe and district were also provided by the thesis (see Table 5.17, Table 5.18 and Table 5.19). However, due to insufficient information, the distributions could not be calculated with respect to health, insecurity and risk dimensions of poverty. There is need for future research to provide this information.

10.4 Causes of Poverty

The fourth objective was to identify and analyse the causes of poverty within the groups and regions affected. The thesis examined the causes of the poverty situations that have been reported above. From the theory on poverty, the four dimensions of poverty are caused by lack of income and assets to attain basic necessities of life, namely food, shelter, clothing, and acceptable levels of health and education. It is also caused by a sense of voicelessness and powerlessness in the institutions of state, resulting from absence of the rule of law, corruption and other forms of bad governance. Poverty is also a result of the vulnerability to adverse shocks and inability to deal with them.

The research identified the main factors causing impoverishment in the fisheries of Lake Victoria. With the help of the research model, the factors identified included the institutional and social factors, inadequate or unsuitable technology, degradation in the fisheries resource base and market, financial and other economic imperfections.

The study of the institutional framework examined the institutions for fisheries development, provision of social services and infrastructure development. Among the fisheries institutions were DFR, FIRRI and the Local Government and their responsibilities included policies and planning, research, fisheries management and extension. The assessments were carried out with the help of SWOT analyses. It was concluded that there was possibility that the institutions contributed to poverty by failing to effectively provide the required services to the communities. Their limitations included insufficient staffing, training, equipment and funding. Their approaches in resource management as well as in

research have been ineffective. Links between them and the communities have been weak and with respect to resource management, the regulatory framework was inadequate and some of the staffs were corrupt in enforcing regulations. However, opportunities now exist for them to provide better services. These include improved budgeting by Government as well as better prospects for donor funding; improved policy framework within PEAP, PMA and NFP which would address their major constraints. There is also willingness among the local communities to participate in resource management and extension as well as research.

The institutions responsible for provision of social services and infrastructure included the Ministry of Health, Ministry of Education and Sports and the Ministry for Transport, Housing and Communications. SWOT analyses revealed that they could have contributed to poverty by their failure to deliver satisfactory health services, control the spread of diseases, eliminate illiteracy, provide adequate knowledge and skills to the poor, provide access roads, water transport and landing piers at landing sites. The Ministry of Finance, Planning and Economic Development was responsible for economic policies and for funding all Government programmes. However, it is considered to have contributed to poverty through the social impacts of the Structural Adjustment Policies. It has also failed to mobilise finances for fisheries services, infrastructure and development. The issue of institutional links was examined and weaknesses were identified, particularly at the Central Government level. There is, therefore, need for strengthening them.

Local institutions were also assessed for their contribution towards poverty reduction. Their key role was in mobilising the communities for effective participation in development programs that affect their livelihood. The institutions include the Local Councils, the Landing Management Committees and the Head Fishermen or 'Gabunga'. Their strength is in the local knowledge and continuous contact with the communities. However, they have not been able to mobilise communities for effective participation in resource management, extension or research. SWOT analysis revealed that their limitations included weak leadership, lack of skills and inadequate resources.

The thesis studied the technology available for production, processing and marketing in fisheries for its role towards the poverty situation. It was concluded that the production technology was of limited productivity and much of the equipment and techniques in use threatened the sustainability of the resource. Processing technology was limited with respect to ensuring maintenance of the quality of fish, minimising post-harvest losses and improving product range. The underlying technological problems included insufficient knowledge, poor equipment and techniques and limited infrastructure, facilities and services. It was not, therefore, expected that the technology would be able to lift the fishery operators out of poverty. In this respect, the thesis reviewed the status of training, extension and research and the limitations identified. Provisions under existing policies on service provision were examined and their relevance to poverty in fisheries assessed. On the basis of the findings on this area, a few recommendations have been developed.

The study examined the fisheries resource base for its contribution to poverty and identified four dimensions of resource degradation on Lake Victoria. These included stock decline, species reduction, increasing proportions of juveniles in the catch and deterioration in water quality. The impact of the resource degradation was expected to be manifested in reduced incomes to fishers, deterioration in health of fishing communities and creation of a sense of insecurity and state of risk among them. The status of fisheries management was reviewed, noting its limitations and assessing the proposed plans for improvement.

Finally, the effects of economic, market and financial factors were studied. The findings were that the recent economic policies under the Structural Adjustment Programmes, namely financial austerity, liberalisation, privatisation and investment promotion, had some positive effects like increased supply of fishing inputs on the market and higher fish prices to some producers. However, overall, they had greater negative effects through rising costs in the industry; threatening resource sustainability; denying livelihood opportunities for local middlemen and depriving local consumers of their supply of fish. Imperfections within the fish marketing system affected demand as well as pricing for fish, with the result that fishers could not obtain prices that reflected the resources and effort put into

fishing. There were also insufficient financial services available to operators, a factor that hindered their progress. Existing policies and plans were assessed and areas for recommendations for strengthening the economic interventions for poverty reduction identified.

The objective is considered to have been met.

10.5 Poverty Reduction Strategies

The fifth research objective was to identify the necessary types of intervention for poverty reduction, through policies and programs and their appropriate points of application. The thesis was able to accomplish this at two levels. First, at various points on the thesis, discussions were concluded with summaries of issues and identification of the required action. With respect to institutional analyses, this was achieved with the aid of SWOT analyses. A summary and required actions have been provided for each of the factors causing poverty, thus indicating the appropriate points of interventions for the purpose of achieving poverty reduction. Secondly, the thesis has provided a section on recommendations, summarising and refining the proposed actions given at various points into a package that would lead to poverty reduction.

This objective was also met.

10.6 Assessment of Policies

The final objective was to assess Uganda's recent poverty reduction policies and programs at the national level and in the fields of agriculture, fisheries or environment for their relevance and effectiveness for poverty reduction in fisheries.

In order to fulfil this objective, the thesis identified the essential policies and programs that had relevance for the poverty in fisheries. These included the PEAP, PMA, NFP and the Local Governments Act, 1997. These policies were first analysed as part of the background information on Uganda (see Sections 2.3 and 2.5). Subsequently, continuous references to them have been made during discussions on the factors of poverty and identification of the required action. It

has been noted that in principle, the policies are largely relevant to the poverty issues of Lake Victoria fisheries. However, their limitations are that they lack sufficient focus on fisheries and their application would be limited.

The thesis pulls together observations on existing policies on the different areas and synthesises them into an item under the Recommendations, aimed at re-focusing of existing policies and programs to become more relevant and applicable to poverty reduction in fisheries.

Economic policies which came into effect in the early stages of SAP were also reviewed for their impact on poverty in fisheries, as reported in Section 10.4 above. The thesis was, therefore, able to provide assessment of existing policies and programmes.

However, the thesis did not attempt to make assessment of the major projects in the fisheries. This was because by the time of writing, the relevant projects were still being implemented. It is recommended that future research should assess the two main projects, namely LVEMP and LVFRP for their contribution to poverty reduction in fisheries.

10.7 Lessons from the Models for Fisheries Management

The effectiveness of the various poverty reduction policies and measures will depend on the extent to which better fisheries management can be put in place. In this respect, the thesis draws important lessons from the existing models for improving fisheries management on Lake Victoria. To begin with, Drummond and Symes (1997) expressed the need to understand the causes of unsustainable tendencies in fisheries and recommended that policy must move beyond treating unsustainable practices and events as discrete occurrences to a situation where they are addressed as outcomes of economic and social processes and the conditions in which they occur. The thesis has made a step in this direction by providing social and economic explanations for ecological resource degradation within fisheries. It has attempted to account, to some extent, for the observed stock declines, species reduction, juvenile catch and deterioration in water quality in terms of social and economic explanations, including economic policy, affluence; market demand, poverty, culture, population growth and livelihood

sources. The lesson from this is that success in fisheries management will depend significantly on what happens outside the fisheries.

Within the Lélé model, access to resources is considered to have consequences for poverty, affluence and resource degradation (Lélé 1991). Restricted access is said to create poverty directly for the people to whom access has been denied. Open access, on the other hand, starts off with affluence which will, however, be short-lived, as greater effort is attracted into the fisheries, resulting in degradation of the resource base. The lesson is, therefore, that better management should involve some degree of control of access to the fisheries. There is a second cycle within the model, linking affluence, culture and technology to environmental degradation. The lesson is to adopt an exploitation system that is not driven entirely by productivity maximisation but is instead moderated by culture and values to extract quantities of the resources required to meet local needs. One approach to controlling access to resources and making use of culture and values is by granting territorial user-rights to the different fishing communities. Difficulties might arise in effecting spatial separation of resource user-groups to isolate them from each others' activities but experience elsewhere has shown that this is workable.

In granting territorial use-rights to fishing groups, lessons could be drawn from the 'Indiana' model, which provides an understanding of relationships between individuals in a user-group over a resource, involving a 'triangle of strategic assets' that influence these relationships (WPTPA 1997). The recommendations are for smaller-sized groups which are said to work better; face - to - face contact as the mode of communication; shared norms, particularly if they are cultural; congruency of interests and resources and track record over time.

Decisions on the type of management regime for Lake Victoria could be guided by the 'Sen and Nielsen' model. It describes the range of management options from the 'instructive' model where Government is the dominant partner to the 'advisory' type where the user-groups assume greater role than the state, which is reduced to offering management advice (Sen and Nielsen 1996). In view of the failures associated with the 'instructive' model, it is recommended that the user-groups be allowed to assume greater role than the state in the new management regime for Lake Victoria.

However, for user-groups to be successful in regulating the fisheries, there is need to be guided by the 'Ostrom and Pinkerton' criteria (Ostrom 1990, Pinkerton 1989). The conditions relate to appropriate institutional framework for governing common property resources and to organisation of the user-groups for collective action. Some of the conditions already exist on Lake Victoria while others would need to be created.

10.8 The Research Methodology

An output of the thesis has been development of research methodology that brought together a wide range of issues and related them to the poverty situation on Lake Victoria. An important element of the approach has been the use of the research model. The stage had not been reached where a comprehensively linked model for Lake Victoria could be expected, achieved by bringing together the methodologies, techniques, criteria and data. The option at the moment was for an iconic model providing representations of states and not a symbolic model with threads of relationships linking fully the model variables, derived from regression exercises. This did not, however, detract from the model approach, which has proved extremely useful in developing the research.

It has helped to link the findings from the literature review and the research methodologies and relate them to the poverty situation of Lake Victoria. It has guided the research plan. The factors identified have been shown to be relevant in the poverty analysis. The concepts identified in the model were translated into measurable variables and a data collection plan developed, leading to generation of new data sets for Lake Victoria,

The strength of the model is its broad view taken to represent the poverty situation, requiring similarly broad measures of intervention. Many of the key factors fall clearly outside the realm of the 'traditional' fisheries managers. The implication is that the key to addressing the problem of poverty, lies in developing and exploiting beneficial links. Through the model, lessons have been learnt that will be valuable for future use within a similar situation.

However, there are some points along which development of the model could be carried forward. First, it was the intention to keep the model simple, for the

purpose of doing a pioneer study on this area. In the process, it is possible that important factors could have been left external to the model, which should progressively be incorporated in the model. Some of the factors identified were, in fact systems of their own rather than single factors. An example is the institutional framework, within which different types of institutions, policies and regulatory framework are embedded. The sophistication of the model could, therefore, be increased. Identification of links may also be improved. For example, it was observed during the course of the research that many of the factors were also related to each other, implying that there could be smaller cycles of poverty within the model, with compounding effect on the overall system. Future research should examine the links and identify those which are key to breaking the poverty system.

10.9 Recommendations

One of the objectives of the thesis was to identify the necessary types of intervention for poverty reduction, through policies and programs and their appropriate points of application. During the analysis on this thesis, action was proposed at different stages. This section is intended to contribute further towards fulfilling this research objective. It draws on the conclusions presented in the chapter, building upon the various measures proposed during the course of the study. The recommendations are outlined below:

- i) In view of the finding that different dimensions of poverty were prevailing in the fisheries, namely inadequate basic necessities, low education and health achievements, a sense of insecurity and exposure to risk, it is recommended that design of poverty reduction measures takes a broad approach, as no single measure would be able to address all the different types of poverty.
- ii) The research identified variations in poverty levels within the different fisheries activities, social groups and districts. Intervention measures should, therefore, be designed so that they are applicable to and target the relevant activities, groups and geographical locations most affected.

- iii) SWOT analyses of the institutions for fisheries development, social services and infrastructure revealed weaknesses and opportunities that could be exploited to enhance their contribution to poverty reduction. It was further noted that the programs of the institutions did not focus on poverty in fisheries sufficiently. However, it was revealed that many provisions already existed under PEAP and PMA to address the institutional weaknesses and capture the opportunities identified. It is, therefore, recommended that the institutions endeavour to remove the weaknesses identified, using provisions already available under PEAP and PMA. Furthermore, it is recommended that they refocus their priorities and programs to ensure that poverty in fisheries is adequately targeted and capacity built to implement programs aimed at reducing it.
- iv) The research concluded that the technology available in the fisheries did not promote resource sustainability or fish quality preservation and led to substantial post harvest losses. It is, therefore, recommended that FIRRI and FOSRI put in place the necessary facilities and establish the required links with the fishery operators in order to conduct on-site trials with improved equipment and methods successfully applied elsewhere, for their adoption.
- v) In view of the insufficiency of formal education and fisheries knowledge among fishers, arising from limitations within the educational system, the fisheries institutions and the Local Government, it is recommended that in order to enhance knowledge of the fishers and to improve their human capital, fishers should be encouraged to take advantage of UPE to acquire literacy and proceed to secondary school, and even higher, to attain basic education. It is further recommended that fisheries knowledge be introduced into the syllabi of schools as an option for the districts on Lake Victoria. In order to provide specialised fisheries training for both managers and resource users, FTI should be strengthened, its syllabi improved and its functions extended to cater for the artisanal fisherfolk as well. Local Government and NGOs should take responsibility for short courses for resource users.

- vi) It is recommended that a new system for fisheries extension be designed, with improved content and effective delivery systems for technology that is cost-effective, promotes resource sustainability and fish quality. In view of provisions already made within PMA for strengthening agricultural extension through establishment of NAADS, it is recommended that those provisions be strengthened to adequately cater for the needs in fisheries extension.
- vii) In view of the research findings that information about the fisheries research activities did not effectively reach the beneficiaries; research did not address the needs as seen by them and findings were unknown to them, it is recommended that a mechanism of involvement of the fishing communities in the research processes be identified and instituted, also designed to improve communication.
- viii) In order to make fisheries management contribute to the goal of poverty alleviation, it is recommended that the proposed fisheries management plan for Lake Victoria includes provisions to assist the poor to adopt sustainable fishing practices while also supporting some of them to make an exit from fisheries and set up alternative livelihood activities in other fields. Furthermore, it should address the sense of insecurity born by poor people, which will hinder their participation in the proposed co-management systems.
- ix) The analysis of the effects of the key economic policies revealed some major consequences for poverty reduction in fisheries. This raises the need to ensure that the impacts of national policies on fisheries are fully established and adequately addressed. In order to achieve this, it is recommended that FIRRI incorporates policy research into its programmes and builds capacity for it.
- x) Marketing in fisheries was found to be affected by physical limitations and the nature of competition, which influenced the pricing methods for fish. It is recommended, therefore, that to overcome the physical limitations, namely poor infrastructure, services and product quality, the successful implementation of the relevant provisions within PEAP and

PMA should be ensured, through measures to remove the relevant obstacles. The competitive nature of the market is expected to improve once the physical obstacles are removed. This calls for strengthening of the necessary links between fisheries and the rest of the economy.

- xi) It was found out that fishery operators had limited access to credit facilities as well as to other financial services. It was also noted that relevant proposals were available for developing MFIs for the agriculture sector under PMA. It is, therefore, recommended that the proposals under PMA be strengthened and refocused to adequately target the fisheries as well. In view of the unique nature of the fisheries enterprises, it is proposed that the MFIs for fisheries should be different from the others, to avoid fishers being marginalised.
- xii) One of the weaknesses in dealing with the risk dimension of poverty in fisheries was the limited coping strategies, in case of an episode of income or health. It is, therefore, recommended that in order to address the problem of vulnerability, fishery operators should first be encouraged to develop the culture to save when the catches are high. Secondly they should be advised on appropriate wealth items to accumulate that can be readily converted into cash in time of need. Lastly they should be sensitised on the importance of supplementary income activities. For this purpose, they should be equipped with the necessary skills, through a program involving training, extension and research. Resources should be availed to them through appropriate MFIs. These recommendations should be implemented with the full participation of the relevant NGOs and CBOs.
- xiii) The research provided information on the poverty profiles in the fisheries. It identified the activities, groups and regions affected by poverty and the roles played by different factors. In doing this, it has gone a step ahead to fill the socio-economic information gaps reflected within PMA and NFP. It was observed that despite PMA being intended to cater for poverty within the broad agriculture sector including fisheries, its focus was on crops. NFP also raised concern about poverty but did not articulate the problem in any detail nor make specific provisions to reduce it. In both

cases, this is attributed to inadequate information on the poverty situation in fisheries. The relationship between poverty and resource degradation has been well recognised and this thesis has demonstrated its relevance to Lake Victoria fisheries. It is, therefore, recommended that the relevant provisions of PMA and NFP be revised and strengthened in light of the improved information on poverty in the fisheries provided by this thesis.

- xiv) The research methodology was improved by reference to the World Bank Model of Poverty Causation, the Lélé Model of the Poverty-Environmental Degradation Problem and the subsequent Lake Victoria Model of the Poverty Factors in Fisheries, developed in this thesis. Although it has not provided a model with the interlinking causal relationships, it has provided a plan for the research and data collection. Qualitative as well as quantitative analysis will always be required. Even if it is unlikely that a symbolic model will ever be achieved, it is recommended that future research builds on this model approach as it has certainly borne fruit in this thesis and will certainly do so in the future, particularly when attempting to forecast changes arising from interventions.

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Appendix 1: KEY INFORMANT INTERVIEW SCHEDULE:

International Fisheries Institute

THE UNIVERSITY OF HULL

STUDY OF POVERTY ALLEVIATION WITHIN THE FISHERIES OF LAKE VICTORIA, UGANDA

This research is examining the involvement of people in the different fishery activities on Lake Victoria in order to identify opportunities for poverty reduction within the fisheries. The data will initially be used to produce a thesis for the University of Hull and the information generated will be used in planning poverty alleviation programs for the fishing communities of Lake Victoria. You are requested to participate in the research by answering questions concerning your activities.

Name of interviewer _____

Date _____

1. Landing _____

2. Region _____

3. Name of informant _____

4. Status _____

A. Demographic Data

5. Population of Landing by age, sex:

Age	Male	Female	Total
Below 18			
18 and over			

6. Population growth rate: _____

7. No. of households at the Landing: _____

	Fish Work	Other Occupation	Total
Households			

8. Average size composition of the households: _____ (persons)

9. Proportion of households that is indigenous to the area: _____

10. Proportion of households that is immigrant to the area: _____

11. Local households that have migrated to other landing sites: _____

B. Infrastructure and Facilities

Facility/Service	Availability	Number
Access road		
Public transport:		
Supply shops:		
Gear shops		
Engine repair workshops		
Boat building yards		
Fuel supply pumps		
Bank:		
Police station:		
Piped water:		
Electricity:		
Other		

12. Credit facilities operating at the landing site:

13. Extension services available:

14. Research services:

15. Fisheries management activities:

16. Development programs and projects:

C. Social Aspects

17. Main tribes:

Tribe	Proportion of Population
Teso	
Baganda	
Samia	
Basoga	
Alur	
Banyankole	
Japadhola	
Others	

18. The leadership structure at the Landing: _____

19. Associations of residents:

Name of group	Year of formation	No. of members	Purpose

20. Decision making at the Landing:

21. Dissemination of information:

D. Education

22. Literacy rate in the community: _____

23. Population of school going children in the community: _____

24. School enrolment: _____

25. Educational Facilities:

Type of School	Number	Government/Private

E. Incomes

26. Main income activities at the landing site:

27. Activities which offer greatest employment opportunities to labourers:

28. Proportion of residents who are unemployed: _____

29. Main categories of residents by income status:

Income Category	Proportion of Residents

30. Main factors in income variations:

31. Monthly fluctuations of income levels at the landing site:

	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE
Income Level												

Levels given as: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

F. Nutrition and Health

32. The main supply sources of food to the landing site:

Food Item	Main source	Distance (km)

33. Availability of food during the year:

	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE
Income Level												

34. The main diseases at the landing site:

35. Seasonal variations in incidence of the main diseases at the landing site:

Month Disease	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE

Levels given as: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

36. Health facilities accessible to the landing site:

Type of Facility	Number	Government/Private

37. Primary health care services available at the landing site:

38. Health programs at the landing site:

G. Production Activities

39. Number of boats at the landing site:

Types of boat	Operational	Non operational	Total
Sese			
Parachute			
Dug-out			
Others			

40. Proportion of boats that are visiting from other landing sites: _____

41. Number of local boats out visiting other landing sites: _____

42. Number of outboard engines at the landing site:

Types of engine	Operational	Non Operational	Total
Below 10 HP			
10-20 HP			
Above 20 HP			

43. Number of engines visiting from other landing sites: _____

44. Engines from the landing site visiting other places: _____

45. Types of gear in use at the landing site:

Gear type	No
Gillnet	
Beach seine	
Mosquito seine	
Cast net	
Long line	

Fishing rod	
Trap	
Other	

46. Ownership distribution of boats and gear:

Ownership of Equipment	Number	
	Male	Female
Fishers with no boat		
Fishers with one boat		
Fishers with two or more boats		
Fishers with one net		
Fishers with two or more nets		

47. Fishing labourers at the landing site:

Type of Labourer	Number	
	Male	Female
Labourers currently working		
Labourers available but without work		
Total		

48. Main species landed by the boats:

Species	Number of boats
Nile perch	
Tilapia	
Mukene	
Mixed species	
Others	

49. Annual catches from the landing site:

Species	Quantity (kg/year)
Nile perch	
Tilapia	
Mukene	
Others	

50. Levels of fish catch during the different months of the year:

Month	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE
Level of catch												

Levels given as: Poor [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

51. The different types of fish buyers at the landing site:

Type of Buyers	Number
Factory agents	
Bicycle traders	
Fish processors	
Truck traders-local	
Truck traders-regional	
Consumers on beach	
Others: (specify)	

H. Fish Processing

52. Fish processing assets at the landing site:

Asset	Condition	
	Operational	Non-oper.

53. Quantities of fish processed at the landing site in a week:

Species	Quantities (kg)		
	Smoked	Sundried	Fried
Nile perch			
Tilapia			
Mukene			
Others			

54. Levels of fish processing activities during the months of the year:

Month	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE
Level of processing												

Levels given as: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

55. Workers involved in fish processing activities:

	Number	
	Male	Female
Workers currently working		
Workers available but without work		
Total		

I. Fish Trade

56. Fish trade assets at the landing site:

Asset	Condition	
	Operational	Non- oper.

57. Quantities of fish supplied from the landing site in a week:

Species	Quantities (kg)	
	Fresh	Processed
Nile perch		
Tilapia		
Mukene		
Others		

58. Levels of fish trade activities during the different months of the year:

Month	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE
Level of trade												

Levels given as: Poor [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

59. Number of workers involved in fish trade activities:

	Number	
	Male	Female
Workers currently working		
Workers available but without work		
Total		

60. Main destinations of fish from the landing site:

Thank you for your time and the information.

Appendix 2: UNIT SURVEY QUESTIONNAIRE:

International Fisheries Institute

THE UNIVERSITY OF HULL

STUDY OF POVERTY ALLEVIATION WITHIN THE FISHERIES OF LAKE VICTORIA, UGANDA

Name of Interviewer _____

Date _____

1. Landing _____

2. Region _____

3. District _____

This research is examining the involvement of people in the different fishery activities on Lake Victoria in order to identify opportunities for poverty reduction within the fisheries. The data will initially be used to produce a thesis for the University of Hull and the information generated will be used in planning poverty alleviation programs for the fishing communities of Lake Victoria. You are requested to participate in the research by answering questions concerning your activities.

A. Personal data:

4. Name of participant _____

5. Age _____ years

6. Sex [1] Male
[2] Female

7. Tribe [1] Teso
[2] Muganda
[3] Samia
[4] Musoga
[5] Alur
[6] Mugungu
[7] Mukenyeye
[8] Japadhola
[9] Others

8. Marital status:

[1] Married

[2] Single

- [3] Divorced
 [4] Widowed
9. How many children do you have? (*alive*) _____
10. How many other dependants do you have? _____
11. How long have you been in fish work? _____ years
12. What is your level of education? (*tick one*)
- [1] No schooling
 [2] Primary
 [3] Secondary
 [4] Tertiary
 [5] University
 [6] Other (specify) _____
13. Indicate the access and use of the following facilities for your household at the Landing:
- | | |
|-----------------------------|---|
| 13a. Health services | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 13b. Primary school | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 13c. All-season access road | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 13d. Potable water | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 13e. Sanitation | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 13f. Housing | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
14. What is your level of involvement in fisheries?
- [1] None
 [2] Part time
 [3] Full time
15. If None, have you been in fish work before?
- [1] Yes => *go to Qu. 16*
 [2] No => *terminate interview*
16. If Yes, how long ago?
- [1] One year or less ago. => *go to Qu. 17*
 [2] Over one year ago. => *terminate interview*
17. What fish activity are you engaged in? (*tick all that apply and proceed to the relevant section*)
- [1] Fishing => *go to Section B*

- [2] Factory agent => go to Section D
- [3] Fish processing => go to Section C
- [4] Fish trade => go to Section D

B. Fish Production

18. Are you able to do as much fishing as you would like to?

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

19. If not, what are the limiting factors? (*name 2 most limiting*)

- [1] Regulations
- [2] Fish scarcity
- [3] Boat limitation
- [4] Gear limitation
- [5] Limitations by other fishers
- [6] Market limitation
- [7] Other (specify) _____

20. Do you own boats?

- [1] Yes
- [2] No => go to Qu.25

21. If Yes, how many? _____

22. Provide information on up to two of the boats as below:

	Boat 1	Boat 2
Boat type		
Boat material		
Length of boat		
Number of crew		
Method of propulsion		
Year of acquisition		
Cost of boat		

Boat types include: [1] Ssesse [2] Parachute [3] Dug-out [4] Others

Methods of propulsion: [1] Hand paddle [2] Outboard engine [3] Sail

Boat materials: [1] Wood [2] Fibre glass [3] Other

23. Rate your own investment in boats

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

24. If boats are engine-propelled, provide information on engines as follows:

	Engine 1	Engine 2
Horse Power		
Year of acquisition		
Maintenance cost/month		
Purchase cost (current price)		
Source of funds		

Source of funds: [1] Own savings [2] Loan

25. Do you own fishing gear?

[1] Yes

[2] No => go to Qu.29

26. If Yes, provide information on gear owned as below:

Gear type	No	Cost	Target species
Gillnet			
Beach seine			
Mosquito seine			
Cast net			
Long line			
Fishing rod			
Trap			
Other			

Target species include: [1] Nile perch [2] Tilapia [3] Mukene [4] Others

27. Rate your own gear Poor [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

28. Give your assessment of the technology used with respect to the following criteria:

	Size	Efficy	Cost	Maint. Services	Level of Sophistn	Selectivity
Boat						
Engine						
Gear						

Rating given as: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

N/A Not Applicable

29. Have you adopted a new technology over the last 3 years?

[1] Yes

[2] No =. go to Qu. 31

30. If Yes, what technology?

[1] Use of ice

[2] Refrigerated truck

[3] Improved kiln

[4] Salting

[5] Outboard engine

[6] Other (specify) _____

31. What new technology would you need?

[1] Use of ice

[2] Refrigerated truck

[3] Improved kiln

[4] Salting

[5] Outboard engine

[6] Other (specify) _____

[7] None

32. How many labourers work on the boat and how much are they paid?

	Number		Amount paid (Shs/week)
	Male	Female	
Workers owning nets			
Labourers with no nets			
Family helpers			
Other workers			

33. Assess the labour available to you:

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

34. Assess the labour cost to you:

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

35. What is your average weekly catch and price by species fished?

Species fished	Catch (kg)	Price Shs/kg
Nile perch		
Tilapia		
Mukene		
Others		

36. Rate your own catch quantities: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

37. Rate your own selling prices: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

38. How many days a month do you operate? _____

39. How many hours is a fishing trip? _____

40. What method(s) do you use for remuneration?

[1] Share

[2] Flat rate

[3] Other

41. Indicate the level of your catch during the different months of the year:

Month	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE
Level of catch												

Levels given as: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

42. To whom do you sell your fish?
- [1] Factory agents
 - [2] Bicycle traders
 - [3] Resident landing-side traders/processors
 - [4] Truck traders – domestic
 - [5] Truck traders – regional trade
 - [6] Boat traders
 - [7] Consumers on beach
 - [8] Others: (specify) _____
43. Do you experience any conflicts with other fishers over your work?
- [1] Yes
 - [2] No => go to Qu.80
44. If Yes, where?
- [1] Over fishing ground
 - [2] Over workers
 - [3] Over inputs
 - [4] Over buyers
 - [5] Over prices
 - [6] Others
- C. Fish processing**
45. What type of fish processing are you involved in?
- [1] Smoking
 - [2] Salting/sun drying
 - [3] Frying
 - [4] Other (specify) _____
46. Why have you chosen to go into this activity?
- [1] Skills easy to acquire
 - [2] Little capital required
 - [3] Most convenient
 - [4] Feminine activity
 - [5] Other (specify) _____
47. What fish processing assets do you own?

Asset	No.	Cost	Year of acquisition
Smoking kiln			
Drying rack			
Frying oven			
Salting vat			
Basket			

48. Rate your own investment Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

49. Give your assessment of the technology used with respect to the following criteria:

	Size	Efficiency	Cost	Maint. Services	Level of Sophistn
Smoking kiln					
Frying pan					
Salting equipment					
Drying rack					

Rating given as Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

N/A Not Applicable

50. What quantities of fish do you handle in a week?

Species	Quantities handled (kg)	Buying prices Shs/kg	Selling Prices Shs/kg
Nile perch			
Tilapia			
Rastrineobola			
Others			

51. Rate your own quantities handled:

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

52. Rate your own buying prices: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

53. Rate your own selling prices: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

54. How many workers work on the unit and how are they paid?

	Number		Amount paid (Shs/week)
	Male	Female	
Workers with own fish			
Labourers with no fish			
Family helpers			
Other workers			

55. Assess the labour available to you:

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

56. Assess the labour cost to you: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

57. What other inputs do you use and what are their costs?

Type of Input	Quantities per week (Kgs)	Price per Unit (Shs)
Firewood		
Salt		
Oil		

58. Assess your level of satisfaction with the supply and cost of each of the inputs:

58a. Firewood:

supply: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

cost: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

58b. Salt:

supply: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

cost: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

58c. Oil:

supply: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

cost: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

59. How many days a month do you operate? _____

60. How many hours per day does the processing last? _____

61. What do you consider a low, average or high volume of processing activity?

61a. Low: _____ kg/week

61b. Average: _____ kg/week

61c. High _____ kg/week

62. Indicate the level of fish processing during the different months of the year:

Month	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE
Level of processing												

Levels given as: Poor [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

63. To whom do you sell your fish products?

[1] Consumers directly

[3] Retailers at another market

[4] Bicycle traders

[5] Truck traders - domestic

[6] Truck traders - regional export

[7] Others: (specify) _____

D. Fish trade

64. What type of fish trader are you?

[1] Factory agent - Nile perch

[2] Factory agent - Mukene

[3] Bicycle trader

[4] Landing-side trader

[5] Truck trader - domestic market

[6] Truck trader - regional export

[7] Fish factory

[8] Other (specify) _____

65. What fish trading assets do you own?

Asset	No.	Cost	Year of acquisition
Weighing scale			
Trucks			
Pick-ups			
Motorcycle			
Bicycles			

Boxes/baskets			
Platform			

66. Rate the above trading assets you own:

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

67. Give your assessment of the technology used with respect to the following criteria:

Trading assets	Size	Efficiency	Cost	Maint. Services	Level of Sophistn
Weighing scale					
Trucks					
Pick-ups					
Motorcycle					
Bicycles					
Boxes/baskets					
Platform					

Rating given as Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

N/A Not Applicable

68. What quantities of fish do you handle in a week?

Species	Quantities handled (kg)	Buying prices Shs/kg	Selling Prices Shs/kg
Nile perch			
Tilapia			
Rastrineobola			
Others			

69. Rating of quantities handled: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

70. Rating of buying prices: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

71. Rating of selling prices: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

72. How many workers do you use and how do you pay them?

	Number		Amount paid (Shs/week)
	Male	Female	
Workers with own fish			
Labourers with no fish			
Family helpers			
Other workers			

73. Assess the labour available to you:

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

74. Assess the cost of labour to you: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

75. What other inputs do you use and what are their costs?

Type of Input	Quantities per week	Cost per Unit
Fuel		
Ice		
Wrappings		
Preservatives		

76. Assess your level of satisfaction with the supply and price of each of the inputs:

76a. Fuel:

supply: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

cost: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

76b. Ice:

supply: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

cost: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

76c. Wrappings:

supply: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

cost: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

76d. Preservatives:

supply: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

cost: Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

77. How many days a month do you operate? _____

78. What do you consider a low, average or high volume of fish trading activity?

78a. Low: _____ kg/week

78b. Average: _____ kg/week

78c. High _____ kg/week

79. Indicate the level of fish trade during the different months of the year:

Month	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE
Level of trade												

Levels given as: Poor [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

E. Economic issues

80. Do you keep books of accounts on your fish work?

[1] Yes

[2] No

81. If Yes, what books?

[1] Ledger books

[2] Dairies

[3] Exercise books

[4] Other

82. If No, why?

[1] Not interested

[2] Fear of taxes

[3] Unable to write the books

[4] Lack of time

[5] Other (specify) _____

83. How did you raise the capital for the activity?

[1] Owner's savings

[2] Loan from fish trader

[3] Loan from credit institution

[4] Contributed by owner and labourers

[5] Family capital

[6] Other

84. How are the operating costs shared between owner and labourers?

[1] Met fully by owner

[2] Family capital

- [3] Met by owner, except food for labourers
- [4] Shared between owner and labourers
- [5] Other (specify) _____

85. How are revenues shared between owner and labourers?

- [1] Shared in agreed proportions
- [2] Labourers paid fixed rates
- [3] Sharing of catch before sale
- [4] Other (specify) _____

86. How much do you earn from fish work per week?

86a. [1] In a good week Shs _____

86b. [2] In a bad week Shs _____

87. How do you utilise most of your earnings from fish work? *(give up to 2 options).*

- [1] Maintain the household and pay fees
- [2] Re-invest in fisheries
- [3] Invest elsewhere
- [4] Buy assets
- [5] Other (specify) _____

88. What is your approximate household consumption expenses per week? Shs ____

89. What assets and other items of wealth do you own?

Item	No	Value
Iron roof house		
Land		
Vehicle		
Bicycle		
Cattle		
Goats		
Radio		
Other		

90. How do you relate with the middlemen?

- [1] Deal with any middlemen

[2] Deal with one or a few specific middlemen

[3] Deal with no middlemen => go to Qu.

[4] Other

91. What services do you obtain from the buyer of your fish?

[1] Supplies food

[2] Supplies fishing gear

[3] Provides boat/outboard engine

[4] Provides credit/cash loans

[5] Other (specify) _____

[6] None

92. Have you obtained any credit for your activities over the last three years?

[1] Yes

[2] No => go to Qu. ____

93. If Yes, give the information as below:

Source	Amount (Shs)	Duration (months)	Purpose	Amount repaid
A bank				
Poverty Alleviation Project (PAP)				
Entandikwa (seed money) scheme				
EDF Micro-projects programme				
Middlemen				
Private individual				
Other				

94. What problems did you experience with the credits?

[1] Credit too little

[2] Period too short

[3] Interest too high

[4] Occurrence of calamity

- [5] Other
- [6] None
95. From which source would you prefer to obtain your credit?
- [1] A bank
- [2] Poverty Alleviation Project (PAP)
- [3] Etandikwa (seed money) scheme
- [4] Micro-projects programme
- [5] Middlemen
- [6] Private individual
- [7] Other
- [8] None
96. What is your main reason for the choice?
- [1] Easier to obtain
- [2] Lower interest
- [3] Longer repayment period
- [4] Other
97. How do you perceive the future for fish work?
- Poor [1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
98. On what factors do you base your perception?
- [1] High earnings
- [2] Reliability
- [3] Job security
- [4] Dignity
- [5] Other (specify) _____
99. What do you do when you perceive the future to be bright?
- [1] Re-invest in fishery
- [2] Take loans
- [3] Spend more time on fish work than elsewhere
- [4] Other (specify) _____
100. What do you do when the future is bleak?
- [1] Invest elsewhere
- [2] Avoid credit
- [3] Use more time on other activities

- [4] Other (specify) _____
101. What are the risks, uncertainties and threats associated with your fish work?
- 101a. Threats
- [1] Theft
- [2] Drowning
- [3] Wild animals
- [4] Moonlight
- [5] Other (specify) _____
- 101b. Risks and uncertainties
- [1] Heavy rains
- [2] Lightening
- [3] Floods
- [4] Unpredictable market
- [5] Other (specify) _____
102. How do you safeguard against them?
- 102a. Safeguards against threats
- [1] Patrolling
- [2] Life jackets
- [3] Day fishing
- [4] None
- [5] Other (specify) _____
- 102b. Safeguards against risks and uncertainties
- [1] Wearing black polythene bags
- [2] None
- [3] Other (specify) _____
103. Did you find it easy to enter into your kind of fish work?
- [1] Yes
- [2] No => *go to Qu.105*
104. If Yes, why?
- [1] Capital required is small
- [2] Technology is simple enough
- [3] Laws and regulations not too restrictive
- [4] Required skills easy to acquire

- [5] Other (specify) _____
105. If No, why ?
- [1] Capital required is too high
 - [2] Technology too complex
 - [3] Laws and regulations too restrictive
 - [4] Required skills not easy to acquire
 - [5] Cultural hindrances
 - [6] Other (specify) _____
106. Would you find it easy to quit your fish work?
- [1] Yes
 - [2] No => *go to Qu. 108*
107. If Yes, why?
- [1] Equipment easy to dispose of
 - [2] Alternative activities available
 - [3] Other (specify) _____
108. If No, why ?
- [1] Equipment not easy to dispose of
 - [2] Alternative activities not available
 - [3] It is a family occupation
 - [4] Other (specify) _____
109. If you quit your present type of fish work, which activity can you most readily move into?
- [1] Another type of fish work
 - [2] Farming, related
 - [3] Trading in other goods
 - [4] Providing services
 - [5] Cottage, craft
 - [6] Others (specify) _____
 - [7] None
110. Is your work affected by the activities of (other) fishermen?
- [1] Yes
 - [2] No => *go to Qu.116*
111. If Yes, what are the positive effects?

- [1] Support to each other
 - [2] Ability to attract external support
 - [3] Supply of fish
 - [4] Other, (specify) _____
112. If Yes, what are the negative effects?
- [1] Competition
 - [2] Conflict
 - [3] Supply of unsuitable fish quality
 - [4] Other, (specify) _____
113. Is your work affected by the activities of (other) fish processors?
- [1] Yes
 - [2] No => go to *Qu.116*
114. If Yes, what are the positive effects?
- [1] Market for fishermen
 - [2] Incentive for quality
 - [3] Ability to attract external support
 - [4] Support to each other
 - [4] Other, (specify) _____
115. If Yes, what are the negative effects?
- [1] Competition
 - [2] Conflict
 - [3] Supply of unsuitable fish quality
 - [4] Other, (specify) _____
116. Is your work affected by the activities of (other) fish traders?
- [1] Yes
 - [2] No => go to *Qu. ___*
117. If Yes, what are the positive effects?
- [1] Market for fishermen
 - [2] Incentive for quality
 - [3] Ability to attract external support
 - [4] Support to each other
 - [5] Other, (specify) _____
118. If Yes, what are the negative effects?

- [1] Competition
 - [2] Conflict
 - [3] Supply of unsuitable fish quality
 - [4] Other
119. Is your work affected by the activities of fish factories?
- [1] Yes
 - [2] No => *go to Qu.122*
120. If Yes, what are the positive effects?
- [1] Market for fishermen
 - [2] Incentive for quality
 - [3] Ability to attract external support
 - [4] Support to each other
 - [5] Other, (specify) _____
121. If Yes, what are the negative effects?
- [1] Competition
 - [2] Conflict
 - [3] Supply of unsuitable fish quality
 - [4] Other (specify) _____
122. Is your work affected by other activities outside fisheries?
- [1] Yes
 - [2] No => *go to Qu.126*
123. If Yes, by whom?
- [1] Farming, related
 - [2] Trading in other goods
 - [3] Providing services
 - [4] Cottage, craft
 - [5] Other (specify) _____
124. If Yes, what are the positive effects?
- [1] Market for fishermen
 - [2] Incentive for quality
 - [3] Support to each other
 - [4] Ability to generate external support
125. If Yes, what are the negative effects?

- [1] Competition
 - [2] Conflict
 - [3] None
126. Is your work affected by fishermen's associations and groups?
- [1] Yes
 - [2] No => go to Qu.129
127. If Yes, what are the positive effects?
- [1] Information
 - [2] Training
 - [3] Advocacy
 - [4] Co-ordination
 - [5] Other (specify) _____
128. If Yes, what are the negative effects?
- [1] Rivalry
 - [2] Exploitation
 - [3] Excessive contributions
 - [4] Other (specify) _____

F. Social Issues

129. Does your culture have any views that relate to fish work?
- [1] Yes
 - [2] No => go to Qu. 134
130. If Yes, what are they?
- [1] Free fish for relatives
 - [2] People who do not eat fish
 - [3] Taboo
 - [4] Totem
 - [5] Other (specify) _____
131. How have these views affected your work?
- | | |
|------------------------------|---|
| 131a. Through better catch | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 131b. Through better product | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 131c. Through higher prices | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 131d. Through lower costs | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |

- 131e. Through better storage Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 131f. Through better management Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 131g. Other (specify) _____ Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
132. Name any other views outside your culture that relate to fish work
- [1] Non-use of toilet
- [2] Non-eating of fish
- [3] Totem
- [4] Taboo
- [5] Other (specify) _____
133. How have they affected your fish work?
- 133a. Through better catch Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 133b. Through better product Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 133c. Through higher prices Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 133d. Through lower costs Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 133e. Through better storage Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 133f. Through better management Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 133g. Other (specify) Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
134. In which areas do you have knowledge and skill for fish work? (*tick up to 2*)
- [1] Fishing methods
- [2] Fish handling
- [3] Fish processing
- [4] Business management
- [5] Other (specify) _____
135. How did you obtain your knowledge and skill for fish work?
- [1] Family
- [2] Friends
- [3] Worked as crew member before
- [4] Own experience
- [5] Others (specify) _____
136. Assess your level of satisfaction with the knowledge and skill you have.
- Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

G. Other occupation

137. Do you have other complementary activities to fish work?

[1] Yes

[2] No => go to Qu. 143

138. If Yes, what are the most important? (*give up to 2*)

[1] Farming, related

[2] Trading in other goods

[3] Providing services

[4] Cottage, craft

[5] Other (specify) _____

139. Rank the activities you are involved in: (*up to 3*)

[1] Fish work

[2] Farming, related

[3] Trading in other goods

[4] Providing services

[5] Cottage, craft

[6] Other (specify) _____

140. What productive roles are played by different members of your household?
(*up to 2 most important*)

140a. Head of Household:

[1] House work

[2] Fish work

[3] Farming, related

[4] Trading in other goods

[5] Providing services

[6] Cottage, craft

[7] Other (specify) _____

140b. Wife 1:

[1] House work

[2] Fish work

[3] Farming, related

[4] Trading in other goods

[5] Providing services

[6] Cottage, craft

[7] Other (specify) _____

140c. Wife 2:

[1] House work

[2] Fish work

[3] Farming, related

[4] Trading in other goods

[5] Providing services

[6] Cottage, craft

[7] Other (specify) _____

140d. Children:

[1] House work

[2] Fish work

[3] Farming/Livestock

[4] Trading in other goods

[5] Providing services

[6] Cottage, craft

[7] Other (specify) _____

140e. Others:

[1] House work

[2] Fish work

[3] Farming, related

[4] Trading in other goods

[5] Providing services

[6] Cottage, craft

[7] Other (specify) _____

141. Indicate for each activity your household members are involved in, the labour demand in the different months of the year.

Activity/ Month	JA	FE	MA	AP	MA	JN	JL	AU	SE	OC	NO	DE
House work												

- [1] Once a month
- [2] Once in three months
- [3] Once in six months
- [4] Once in one year
- [5] Other (specify) _____

147. Please assess this frequency of extension services:

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

148. What areas does the extension cover? (*tick up to 2*)

- [1] Fishing methods
- [2] Fish handling
- [3] Fish processing
- [4] Business management
- [5] Other (specify) _____

149. Give your assessment of the extension in the areas covered as you mentioned above:

- | | |
|---------------------------|---|
| 149a. Fishing methods | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 149b. Fish handling | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 149c. Fish processing | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 149d. Business management | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 149e. Other (specify) | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |

150. Have your activities benefited from this extension?

- [1] Yes
- [2] No => *go to Qu. 152*

151. If Yes, assess how your activities benefited in the different ways listed below:

- | | |
|----------------------------------|---|
| 151a. Through better catch | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 151b. Through better product | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 151c. Through higher prices | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 151d. Through lower costs | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 151e. Through better storage | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 151f. Through better management: | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 151g. Other (specify) _____ | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |

152. If No, why not?

- [1] Message not relevant

- [2] Methods not understood
- [3] Lack of requirements for its application
- [4] Lack of capital for its application
- [5] Conditions for acquiring skills not available
- [6] Other (specify) _____

I. Research

153. Are you familiar with the areas in which fisheries research has been done?

- [1] Yes
- [2] No => go to Qu.159

154. If Yes, which areas?

- Fish resources
- Fish production
- Fish processing
- Fish marketing
- Other (specify) _____

155. Give your level of satisfaction with the research work in the areas you have mentioned above:

- | | |
|-----------------------------|---|
| 155a. Fish resources | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 155b. Fish production | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 155c. Fish processing | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 155d. Fish Marketing | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 155e. Other (specify) _____ | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |

156. Did your work benefit from the research?

- [1] Yes
- [2] No => go to Qu. 158

157. If Yes, assess how your work benefited in the different ways listed below:

- | | |
|------------------------------|---|
| 157a. Through better catch | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 157b. Through better product | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 157c. Through higher prices | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 157d. Through lower costs | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 157e. Through better storage | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 157f. Other (specify) _____ | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |

158. If No, why not?

- [1] Research unknown
- [2] Conditions for acquiring knowledge not available
- [3] Findings not understood
- [4] Lack of requirements for its application
- [5] Lack of capital for its application
- [6] Other (specify) _____

J. Development projects

159. Are you aware of the areas in which development projects have been done?

- [1] Yes
- [2] No => go to Qu. 166

160. If Yes, which areas?

- [1] Fish resources
- [2] Fish production
- [3] Fish processing
- [4] Fish marketing
- [5] Community development
- [6] Other (specify) _____

161. Name the project: _____

162. Give your level of satisfaction with the development projects for only the areas you have mentioned above:

- | | |
|-----------------------|---|
| 162a. Fish resources | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 162b. Fish production | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 162c. Fish processing | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 162d. Fish marketing | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 162e. Community dev. | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 162f. Other (specify) | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |

163. Has your work benefited from the development projects?

- [1] Yes
- [2] No => go to Qu. 166

164. If Yes, assess how your work benefited in the different ways listed below:

- | | |
|------------------------------|---|
| 164a. Through better catch | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 164b. Through better product | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |
| 164c. Through higher prices | Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good |

- 164d. Through lower costs Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 164e. Through better storage Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 164f. Through better
 organisation of fishers Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good
- 164g. Other (specify) Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

165. If No, why not?

[1] Project did not reach our area

[2] Project did not cover our activities

[3] Lack of the necessary requirements

[4] Lack of the capital required

[5] Other (specify) _____

K. Fisheries management

166. Are you familiar with the fisheries management laws and regulations?

[1] Yes

[2] No => *go to Qu.* __

167. If Yes, which areas are covered? (*tick all mentioned areas*)

[1] Juvenile fish size restrictions

[2] Gear type restrictions

[3] Fishing method regulations

[4] Fishing time regulations

[5] Boat size regulations

[6] Other (specify) _____

168. Give your opinion on the suitability of these laws and regulations for fisheries management.

Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

169. Give your level of satisfaction with the implementation of the management regulations in the areas you have mentioned above:

169a. Fish size Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

169b. Gear type Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

169c. Fishing method Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

169d. Fishing time Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

169e. Boat size Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

169f. Other (specify) Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

170. Has your work benefited from fisheries management?

[1] Yes

[2] No => *go to Qu. 173*

171. If Yes, assess how your work benefited in the different ways listed below:

171a. Through higher catch Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

171b. Through bigger sized fish Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

171c. Through higher prices Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

171d. Through lower costs Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

171e. Other (specify) Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

172. If No, why not?

[1] Regulations not known to fishers

[2] Regulations not enforced

[3] Regulations implemented but have no impact

[4] Fisheries damaged beyond repair

[5] Other (specify) _____

L. Policies

173. Have Government policies affected your fish work?

[1] Yes

[2] No => *thank respondent and end interview.*

174. If Yes, which policies?

[1] Investment promotion

[2] Liberalisation

[3] Privatisation

[4] Decentralisation

[5] Other (specify) _____

175. How have the policies affected your fish work?

175a. Through higher catch Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

175b. Through bigger sized fish Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

175c. Through higher prices Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

175d. Through lower costs Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

175e. Other (specify) _____ Poor[1] [2] [3] [4] [5] [6] [7] [8] [9] [10] Good

Thank you for your time and responses.

Appendix 3: LIST OF DATA COLLECTION SITES

Cluster	District	Landing Sites	Markets
Low Income	Bugiri	Matiko	
		Bulosi	
		Maluba	
		Wakawaka	
	Iganga	Musoli	
		Bwondha	
		Namadhi	
		Musubi	
	Rakai	Kasensero	Kyotera
		Sango Bay	Kalisizo
	Kalangala	Kibanga	
		Kachungwa	
		Buyange	
		Kisaba	
		Misonzi	
		Nakalanga	
		Nakirimira	
		Kabbuka	
		Namasale	
Kasirye			
Medium Income	Mukono	Kigugo	
		Namazina	
		Lingira	
		Banga	
		Walwada	
		Kyanamu	
		Kitamiro	
		Kirongo	
		Luffu	

Cluster	District	Landing Sites	Markets
		Lukale	
		Yuwe	
		Nambula	
		Gombolola	
		Kiyindi	
		Koko	
		Senyi	
		Shauriyako/	
		Bugoba	
		Buwangajo	
		Kalega	
		Paradise	
	Mpigi	Busabala	
		Nangombe	
		Kagulube	
		Nakabugo	
		Buganga	
		Bwerenge	
		Kachanga	
		Bugiri	
		Musiisi	
	Masaka	Dimu	Ntendo
		Lambu	Kitengesa
		Nakiga	Kimanya
		Kamunga	Kirimya
		Kalangala	Masaka
			Katwe
			Kinoni
			Kyabakaza
			Lukaya

Cluster	District	Landing Sites	Markets
High Income	Busia	Nalyoba	
		Busime	
		Butangasi	
	Jinja	Masese	
		Wanyange	
		Kampala	Ggaba
			Katwe
			Nakivubo
			Nakulabye
			Shauriyako
		Kalerwe	
		Busega	
		Kitimba	
		Nakawa	
		Owino	